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MODULE 1.2 DIVERSITY AND INCLUSION IN TVET

Course Book



TLAINME 2 -ALVANCED MODULAR TRAINING & EDUCATION IN MECHANICAL & ELECTRICAL ENGINEERING

Education



EDITING

Academic Guidance:

Author:

Illustrations, Layout:

Student Assistant:

Prof. Dr. Bernd Zinn, University of Stuttgart (D t. BPT)

Holler, Stefanie University of Stut. (Dep.

Holler, Stefan Dept. B. University of S. tgart (Dep. 1

Bürgs. balil Febinosa Nie. uilia sity of Stuttgart (Dept. BPT)

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DEAR TEACHERS & LECTURERS,

In South Africa, as elsewhere, the technical and vocational education and training (TVET) attract students from diverse academic, socio-cultural and linguistic backgrounds (KM BW 2019; Mudau 2018) - and all of them with different learning approaches. The differentiation of the students and the recognition of diversity as a value are the guiding principles of educational policy frameworks.

As the international comparison displays, positive promotion of diversity is an important factor for successful educational processes (Fischer et al. 2014: 16). In South Africa, the Department of Higher Education (DHET) has come up with a White Paper for Post-School that envisages to integrate different components that will improve quality. quantity and diversity of Post-School education (DHET 2013). According to DHET, higher to ensure a proper access for learners with discrities the very different education levels of structures in the set of the components (DHET 2013).



ame class can create prob-

ities (D.

PREAMBLE

Linguistically heterogeneous learning groups are a reality and a challenge for lecturers to deal with in the classroom. South African TVET students must learn in two foreign languages: English and the subject-specific academic language.

The purpose of Module I.2 is to increase TVET lecturers' competence and confidence working in inclusive situations. The module also aims to equip you with relevant theoretical knowledge and strategies that will empower you to respond to individual needs of learners (i.e., enhancing learners' subject competences through adequate language support).

With this module you will be able to adapt the curriculum according to the ind vidual needs of learners including those who experience barriers to learning. You will also be able to put relevant classroom management techniques into

TVET lecturers will also be able to make use of the introduced disconchanged at different stations (hand-on practice). In the training you and develop movative scenarios with reference to your teaching subject. During a simplementation at your college, you will transfer your newly acquired knowled as indexes integratice.

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In Module I.2, you will

- familiarise yourself with the latest concept of incluse education and training
- develop strategies, acquir als, and gap ctical teaching ideas related to usive tea s and the familiarise yourself with latest aning practical strategies.
- advancements field ge instruct • develop struct s, acquire s, od gain p
- teaching it ecifically relate age inte, learning methodology,
 - ex, and engage parious learning activities that can be in mented in contant language integrated clas
 - roficiency in utilizing a diverse range of chnologies to incorporate interactive activities within your classroom,
 - exchange good practices and discuss challenges with Now colleagues and the course trainer

DBJECTIVES

This course book is a valuable resource designed to help educators navigate the complex and ever-evolving landscape of diversity in vocational education. Begin by reading the introduction of the book. This section provides an overview of the book's purpose, structure, and the importance of diversity and inclusion in TVET. Familiarise yourself with the key concepts and goals outlined here. The second section provides an overview of the book's purpose, structure, and the significance of L2 acquisition in TVET and will walk you through how to effectively use the book or improve L2 learning and communication skills within the TVET context. The tech niques suggested are tried and tested; they draw on both academic resumption of the book best practises.

The book include a selection of the following teaching resource

- Further reading recommendations with links
- Teaching and/or learning objectives
- Tips for lecturers
- Web and video links

The course book will be accompanied by orkshow resentations and activities as well as Module I.1 Digital Teaching and Lemning at 2007.

The book is also available in the format

By working through this module, you your teaching repertoire step by step, starting with nt are easy to plement and moving on to those that will help you cudents elop their skills still further. Always work with another lecturer gro' f lect r who teach the same class. Discuss which strategies the Afective a why. Find someone to pair up with and teamgn the tas. dentify sections of the unit that are particularly teach. ou and focus on those. levan

course by accompanies the workshops, where handouts and activities are ided . We approximmend to have the course book of Module I.1 Digital Teachand Learning at TVET to hand.

There is space in this study guide for you to write notes and responses to some of the questions. For some tasks, you might make an audio recording or video in acion. You could share this, along with any other notes with your teacher colleagues.





Chapter 1

'EDUCATION FOR ALL': INCLUSIVE EDUCATION AND TRAINING

1 INTRODUCTION

In South Africa and elsewhere, the TVET colle r and class oms a Jecoi rudau 20 increasingly diverse along a variety of dimensions (KM BW This is due to the idea that the recognition of diver re the ding as a va principles of educational policy frameworks a andainclu ducati sitive promotion of mental human right. As international compari display. diversity is an important factor for successful ed tional pro ses (Fischer et al. <u>'e</u>nsure 2014:16). Therefore, many countries inclusive education system at all levels – pre-school, primary, secondary vocational and life-long ia. learning (CRPD Committee e 24:1).'

NITIO, INCLUSION

proach concept of inclusion shows that the term inclusive - on which Α the ept of inclu based – is derived from its etymological origin in the Midh language and on anally exists there for the situation of 'being enclosed' [for ple, as a monk or hermit in the seclusion of a hermitage; M.G.]. Since the late 980s, inclusion has gradually developed into a technical term in the educational literature of the USA and Canada (cf. Sander 2004: 12). Following the UNESCO World nference on Special Needs Education in Salamanca in 1994 and its final declaradopted in English (cf. UNESCO 1994), inclusion then increasingly became an inte nationally used pedagogical term in connection with Special Educational Need. The opposite of inclusion is exclusion, which in turn denotes separateness, being excluded from something.



Kiuppis (2016): From Special Education, via Integration, to Inclusion: Continuity and Change in UNESCO's Agenda Setting The concept of inclusion in education is not a new one. It has gained extensive recognition as an essential catalyst for educational policies since UNESCO's Salamanca Declaration of 1994. Depending on the context, 'Inclusive Education' (IE) is used in different ways and could be considered an idea, a word, a term, or a pedagogical concept (Kiuppis 2016). The importance of inclusive education in addressing the varied needs of all learners, both within the classroom and in society at large, has been widely acknowledged. This recognition arises from the realisation of the colenges posed by the increasing diversity found in classrooms and broader societa contexts (Booth & Ainscow 2011). Furthermore, while there is broad counters that inclusion is associated with 'schools for all', in the international discours, the tree differing agendas regarding the questions of how to theoretical's frame the tuden population of Inclusive Education (ibid.).

SALAMANCA STATEMENT AND FRAME YK FOR ON ON S NEEDS EDUCATION

The Salamanca Statement and Framew r Actio ecial Needs Education is an outcome of the UNESCO World Conference on Special Education: Access and Quality, Salamanca, Spain, Zana June 1994 Declaration is one of the main documents of international education extensively upon the national expeand rience of the participating countries resolutions and recommendations of the United N d other intergo imental organizations, especially the Standard Rule the Equ on of Opportunities for Persons with Disabilities (WHO

1994). Aim o conf e wa approach of inclusive education, to serve children, particularly those with nam eds. Alth educati the immediate focus of the Salaconference as termed special needs education, its n was: 'Special needs education – an issue of equal concern to he North and of the South – cannot advance in isolation. It count has to form of an overall educational strategy and, indeed, of new nic policies. It calls for major reform of the ordinary social and eco. school' (UNESCO 1994: iii-iv). The opposite of inclusion is exclusion, which in turn denotes separateness, being excluded from something.



The Salamanca Statement and Framework for Action on Special Needs Education

2 FROM EXCLUSION TO INCLUSION

Educational environments for learners with disabilities range from a complete denial of formal educational services (exclusion) to equal participation in all aspects of the education system (inclusion). Researchers generally organise educational systems into four categories: Exclusion, segregation, integration and inclusion. In some countries, such as Italy, progress towards inclusive education has led to the closure of most special needs schools, while in other countries a two-tiered school system has either been developed or continues to exist. Therefore, the still wide variation in school systems across European educational needs, splitt them into mainstream vs. special-need schools (Sansour & Bernhard Despit all the efforts in South Africa, students with disabilities continue to experidiscrimination in terms of access to post-school education ar opportu nities, and the system as a whole has inadequate facilities a staff to er to the needs of the disabled (DHET 2013; 2022).



Source: Created by authors, adapted from TASH, n.d. para. 1 TASH - Inclusive Education

3

MAIN POSITIONS OF INCLUSIVE EDUCATION AND TRAINING

There is a general consensus in the literature that the primary focus of educational integration is on how children with disabilities can best participate in mainstream schools. While it is widely agreed that inclusion is related to the i of 'schools for all,' different agendas exist in the international discourse concerning how to theoretically define the student population of IE. In literature, three main positions can be identified (Kiuppis 2016: 29):

- A significant number of actors and theorists, predominant vm the ed States, perceive the notion of 'addressing special educational mainstream environments' (Thomson et al. 1988: 14 term Inc Education as primarily focused on individuals w disabili[,] This unlools derstanding can be interpreted as ther advoca ig for all' or promoting education in integrated settings as a ative to regated settings (Baglieri et al. 2011 in Kiuppis 2016
- cial Needs Education in terms Some researchers have expanded th cope o. of its target group. Here, inclusive ed eptualised as a framework ntion is c that is aimed at all learner but places rticular en phasis on specific populations that are considered the vuln ble (e.g. working children; children belonging to indigeneus linguistic us minorities; nomadic children; y HIV children affecte S), marginalised (e.g. children from households in rural or remot commu es and children in urban slums), or those who have nally associated with individuals with disabilspecial educat as trad aly ities (JDis 2 9).

A propert understation of inclusive education is associated with approaches to a brown perspective. Inclusive education is considered a non-categorical, l-embrace approach characterised by 'ensuring a basic minimum standard of education reall' (Ainscow 2012: 290 in Kiuppis 2016: 29). Inclusive education deals with diverse learning populations in which individual differences are not classified based on categories such as race, religion, gender, or disability.

White Paper on Special Needs Education (2001) defines inclusive education and ining as:

- 'Acknowledging that all children and youth can learn and that all children and youth need support.
- Enabling education structures, systems and learning methodologies to meet the needs of all learners.
- Acknowledging and respecting differences in learners, whether due to age, gender, ethnicity, language, class, disability, HIV or other infectious diseases.

- Broader than formal schooling and acknowledging that learning also occurs in the home and community, and within formal and informal settings and structures.
- Changing attitudes, behaviour, teaching methods, curricula and environment to meet the needs of all learners.
- Maximizing the participation of all learners in the culture and the curriculum of educational institutions and uncovering and minimizing barriers to learning (DE 2001: 6).'

Table 1 Definition of inclusion and mainstream in 'The White Paper on Special Need

INCLUSION

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Inclusion is about recognizing and respecting the differences among all learners and building on the similarities

Inclusion is about supporting all learners, educators and the system as a whole, so that the full range of learning needs of be met. Main examing is a serving some learned ortra support orthey can 'fit in' or be interacted into the 'normal' by spectrum of the charge and prescribe. The focus is on teaching technical interventions, such as the lacement of learners and learning octors, with the emphasis in programs.

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system

respecting

Mainstreaming and integration focus on changes that need to take place in learners so that they can 'fit in'. Here the focus is on the learner.

ching and lea focus i hasis on the vith th aching strategies deve ent of ge that y e of benefit learners. Incl focuses on over uming barriers system that prevent it from eting the full range of learning needs. The focus is on the adaption and support ystems available in the classroom.

Source: created by author, adapted from DET 2001: 17

Chapter 2

DIMENSIONS OF DIVERSITY AND LEARNING NEEDS

1 INTRODUCTION

Schools and classrooms are becoming increasingly dive re stude many different prerequisites along a variety of dime ins, in ing migration, .ns. T gender, special education needs, and gettedness to e class e differences are multifarious and often overlap. This complexity can be described using hools s accomme e all children al, intellectual, social, the term intersectionality. In America rss of t rèy linguistic or other conditions. This literature these differences are sumemotic marised using eight main dimensions should inc disabled and gifted children, reet and working children, children from (so-called 'Big 8'): Age, gend hnicity, religion, race, sexual orientation ote or nomadic populations, children from functional role, and istic, ethnic or cultural minorities and hysical ability (Krell et al 07). Ano comchildren from other disadvantaged or marginl emp¹ alised areas or groups.' - UNESCO 1994: 6 mon representat ∠d is∢ mostly u diversity y el, v rb'

for diver y manak nt in or azations. It distinguishes between internal and extern wartz & Rowe 2003; Loden & Rosener see Fig. 2). nensions (G. ile ma. in English speaking countries, social, economic or cultural inclusion the context of different groups of individuals that are typically thlighted rded as bein, cluded from education, in Germany for instance, it is focused the inclusive education of people with disabilities into mainstream education. Furthermore, in German science education research, different dimensions of diversity are gender, language, culture & socio-economic status, special needs and rifted students. For South Africa, the Education White Paper 6 (2001) lists age, der, ethnicity, language, class, disability, HIV or other infectious diseases that distinguish learners from each other. The role of language (and verbal interaction) is probably even more significant in contexts of multilingualism and cultural heterogeneity. South African universities, in particular the historically white institutions, have become linguistically and culturally significantly diverse (Webb 2002: 52).



2 DISABILITY

CATEGORIES OF DISABILITY

- Behaviour Disability
- Communication Disability
- Personal Care Disability
- Locomotor Disability
- Body Disposition Disability
- Dexterity Disability
- Situational Disability
- Particular Skill Disability

There are varying definitions of the term disability, depending on the context in which it is used. These contexts can range from legal proceedings and legislative perspectives to international agreements, corporate policies and union provisions. The definitions are rel ative – and still evolving. In simple terms, Disability is any restriction or lack (resulting from an ment) of ability to perform an activity in the i nne or within the range considered nor for a hu rm being, whereas impairment is any loss on of psychological, physiologi omical s or function (WHO 1980: 1/ Accord to the WHO an estimated 1 illion peo 16 % - abr the global



population – currently experience significant disab r South ica, findings show a national disability prevalence **N** owever ere were data nf 7,5 limitations (SSA 2011). Some disabiliti the generatorial a person esult . inherits. They may also be acquired thr rh accia illnesses or chronic conditions. Some disabilities are visible, whi orms of h al illness are invisible. They may be temporary (as leg or an fracture) or permanent. However, not all learners with disabilities have sp tion needs. તા

3 SPECIAL EDUCATIONAL NEEDS

Learners have special educational needs (SEN) if they have a significantly greater difficulty in learning compared to the majority of their peers who are of the same age (Delaney 2016). Learners with learning difficulties might have a disability or condition that affects learning. But there are also learners who are not disabled and need special educational provision, whereas learners who are disabled do not need special provision. Learners with Special Educational Needs are likely to need extra or different help from that given to other children the age. They can get help and advice from specialists or teachers.

Special needs education: definitions across OECD countries

In Germany, special needs education means specific support consact learners. The area of responsibility of special needs education were respected all organizational aspects refers to the special news within the control of disac-

ity exclusively. Learners experience problems because of certain handicaps and/or are in need of additional educational support because of problematic situations, as well as students with temporary learning difficulties (e.g. slow learners, reading and writi difficulties) are supported a COM nation of measures of dif rentiati within the structure of the gen individsystem of suppor emed. grams bas ual education

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earnen ith special educational needs in uth Afric

In th Africa, the learners who are most vulnerable to to learning and exclusion are those who have historically been termed learners with special education needs, i.e., learners with disabilities and impairments. Their increased vulnerability has risen largely because of the historical nature and extent of the educational support provided.

visual impairment, hearing impairment, intellectual learning cess. In Jap. disabil^j physical/motor disabilities, health impairments, speech and language nent, autism, emotional disturbance, learning disabilities, attention deficit mr ractivity disorder and multiple disabilities. In the United Kingdom, a child ha. cial educational needs if he has a learning difficulty which calls for special provision to be made for him. A child has a learning difficulty if he has educa a significantly greater difficulty in learning than the majority of children of its age. A child has a disability which either prevents or hinders it from making use of educational facilities of a kind generally provided for children of its age in schools within the area of the local education authority, or it is under compulsory school age or would be if special educational provision were not made for it, likely to fall within one of these two categories when of that age.

In the United States, a child must be diagnosed as having a disability and the disability must be found to 'adversely affect educational performance' so as to require special services. To receive special education services, a student must demonstrate a disability in one of 13 specific categories, including autism, developmental disability, specific learning disability, intellectual impairment, emotional and/ or behavioural disability, speech and language disability, deaf-blind, visual impairment, hearing impairment, orthopaedic or physical impairment, other heaimpaired (including attention deficit disorder), multiple disabilities and trauma brain injury.

4 LEARNING NEEDS

Learning needs are defined as gaps in knowledge t exist b een a desired level of performance and the actual level of performance Heal+ are Ed tion Association 1985). In other words, a learning need is the someone .cween wl knows and what someone needs or wants to w. Lea verse backgrounds have different learning needs hich m. vise because of:

- Negative attitudes to and stereotypin f differen
- An inflexible curriculum
- Inappropriate language ing and teaching
- Inappropriate
 mmunic
- Inaccessible a uns ouilt e ironments
- Inapp _____riate a ____adequate _____pport services
 - Inac te policies and sistation

he non ognition and non-involvement of parents

hadequately inappropriately trained education managers and educators White Paper 2001)



5 GIFTED STUDENTS

Gifted students are individuals who are recognised for performance that is superior to that of their peers (Worrell et al. 2019). Perhaps the most common conceptualization of giftedness is a high cognitive ability (g factor) or IQ, a variable that continues to play a major role in most models of giftedness. One of the earliest studies in the gifted literature is Terman's (1922, 1925; Terman & Oden 1959) longitudinal study of genius. Terman operationalised giftedness as high IQ and reported publishing data on 25 students with IQ scores above 120 and 59 stude with IQs for the most part above 140 (Terman 1922: 312).

Gifted and talented education has also come to the forefront In South n educational policy in general: 'Gifted students represent an important compone a nation's intellectual capital. They possess the qualities need novative solutions for many scientific and social challenges. Despite clusive acation policy initiatives aimed at ensuring quality education for a the .nt res ch indicates that gifted students from all socio-economic level cultures 'neglected in South African classrooms (Oswald & Pabie 6:273)



Oswald (201 chinking gifted education in South frica: The voices of gifted de 11 students

Chapter 3

DEALING WITH DIVERSITY

1 INTRODUCTION

Central in the current discussion on good teaching is the question of how to best support students in their individual development.

Even if mainstream colleges and classroom et more and more diverse, there stin. barsevei riers for students with disabilities. Thes barriers such as negati rchitectu attitus Acies that are

les and

fave

barriers, inaccessible information and technology, not actually enforced and methodolog, that do n 2011; Morena & Nkoane 2021; Sako 2020; W Papel

linked to teachers' attitudes as well as teachers' competence (including a necessary new didactic-methodical organisation of lessons) affects successful inclusion (Gra & Jones 2016; White Par <u>001).</u> Also, the Educatio nite Pa argues that inclu e educ n is about changing a ud oehavid teaching icula and chods to meet the viron

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Source: Creative Commons License CC BY-NC

2 TEACHERS' ATTITUDE

Teachers' attitudes are essential elements in professional competence (Baumert & Kunter 2006). Positive attitudes towards inclusion play a significant role in the implementation of the inclusive school (European Agency for Special Needs Inclusive Education 2014; Hellmich & Görel 2014; Yuen & Westwood 2001).

Existing studies indicate that teachers tend to have positive attitudes towards inclusion (see Kunz et al. 2010: 93; Przibilla et al. 2016: 38). Factors that influen inclusion-related attitudes are: Experiences with people with disabilities with and outside of work context, subjective perception of different forms of impairment, professional experience, perceived (administrative) support, not reinfluences as well as the self-efficacy of the teachers and trust in own abilitie. Feyerer et al. 2014: 181; Przibilla et al. 2016: 38).





Dignath et al. (2022): Teachers' Beliefs About Inclusive Education and Insights on What Contributes to Those Beliefs: a Meta-analytical Study

rce: Created by author, adapted from Zoyke 2016: 217

3

TEACHERS' COMPETENCE DEALING WITH DIVERSITY

Lecturers need to know which strategies work best so that every student has access to appropriate learning opportunities. Recognition of diversity as a value are the guiding principles of educational policy frameworks. This is linked with the concept of differentiation of the students. As international comparison displays positive promotion of diversity is an important factor for successful extensional processes (Fischer et al. 2014: 16). Knowledge and competencies in the how field Diversity and Inclusivity are tangential to all areas of professional knowledge, and comprises:

- General Knowledge on Diversity and Inclusivity
- Diagnostic
- Consultation
- Support

Access and support for students with doublities to a remain limited despite lecturers' positive attitude since lecture are struggenet to support students with disabilities due to lack of transport of disabilities (Sako 2020).



3.1 GENERAL KNOWLEDGE ON DIVERSITY AND INCLUSIVITY

General knowledge on diversity and inclusivity refers to a broad understanding of concepts, principles, and issues related to diverse identities, cultures, and perspectives, as well as the importance of creating inclusive environments. It encompasses knowledge about various dimensions of diversity, such as race, ethnicity, gender, sexual orientation, age, socioeconomic status, abilities, religior and more. Having general knowledge on diversity and inclusivity involves bein aware of the experiences, challenges, and inequalities faced by different social ing groups. It includes understanding the value and benefits of diversity, p. equality and equity, and recognizing the importance of creating inclusive space where all individuals are respected, valued, and given equal General ortun wledge knowledge on diversity and inclusivity also encompasses k Jut coltural competence, intercultural communication, un inscious bi s, p лege, p er dynamics, social justice, and inclusive practices in gs, such a vious s ducation, workplaces, and communities. It involves und andin ical and societal contexts that have shaped diverse idea ies and need for proactive efforts to address discrimination, prejudice, and stemic b. rs. Developing general knowledge on diversity and *i*usivity is cial for foscering inclusive attitudes, promoting social cohesion, and ds a more equitable and just ng to society. It allows individuals to 🗠 🤉 e in mean. alogue, challenge stereotypes, and actively contrib inclusive and respectful environments to cre. for everyone.

3.2 DIAGNOSTIC

Diagnostic in educational settings involves recording the individual learning status of students. It has a different significance and a different objective. Pedagogical diagnostics makes it possible to assess the learning status of students and to prepare and implement appropriate support in the form of support plant. Educational diagnostics and support are closely interrelated. This includes suit able forms of support (type, duration and scope) as well as regularly updating of support planning. Support plans contain information about the initial continues, procedures and goals of the planned measures. They help teachers to be nore sponsive to the individuality of students and to offer special loging path.

FACETTES OF DIAGNOSTICS

- Quality criteria
- Intelligence
- School performance tests
- Special learning needs assessment, state tradised and here transformed methods
- Students' pre-conceptie
- Academic self-concepts (e.g. Little und-Effect, Hawthorne effect, halo effect)
- Limits of the Jucational settings



What is diagnosed?

Diagnoses can refer to a process, to results or to the constituting conditions. It is important that a diagnosis always keeps a holistic view on the person's ability and development of the students (cf. Greiten 2009: 24). Here are some examples:

- Diagnosis of learning backgrounds and of learning prerequisites (e.g. prior knowledge, cognitive conditions, interests)
- Diagnosis to identify developmental or learning statuses (oriented to competence levels)
- Diagnosis to identify learning potentials, motivations, obstacles to learning or learning progress
- Diagnosis of learning types
- Diagnosis of the learning environment (e.g. family, peer oup infly ces)
- Diagnosis of group processes (e.g. social ch. te in the
- Diagnosis of behaviour or problems (e.g. social viour, k behaviour)
- Diagnosis of academic self-concepts (e.g. the g-Fish-L p-Pond-Effect)
- Diagnosis of subject-related or interdisciplinal earning outcomes or performance and diagnosis of performance icuit (diagnosis of giftedness)
- Diagnosis of individual international areas accortion to the principle of multiple intelligences (von Sald 1 2009: 5

More in M. TRAINME, Unit 3: Diagnosis and Assessment

sro

3.3 CONSULTATION

Consultation is a core skill for school psychologists and other professionals working in school (e.g. teachers). In addition to school career counselling, counselling approaches that affect students, parents and teachers include, for example, counselling for learning and performance problems or behavioural problems at school. School-based consultation is a method of psychological service delivery in whi a school psychologist works together with a teacher and/or parent to identify an analyse a particular problem with a student and then create an intervence plan that the teacher or parent can implement independently or with varying lega of support. The members of the consultation team are typical ferred to so the consultant (e.g. school psychologist), the consultee (e.g. teacher or $_{\rm P}$ = t), as the client (e.g. student).

SCHOOL CONSULTATION

School consultation is a proactive appropriate deliver ansychological and educational services, aimed at fostering collaborative proceerships be a consultants and consultaees. It involves a reciprocal and systematic, contem-solving, cocess, guided by eco-behavioural principles. The prime, consultive is a correngthen and empower consultee systems, ultimately leading to improved **5**, and **4** meing and performance. (Zins & Erchul 2002: 626).

3.4 SUPPORT

Support (or individualised support) is understood to be all actions by teachers that are taken with the intention, or have the effect, of supporting the learning of the individual student, taking into account his or her specific learning requirements, needs, pathways, goals, and opportunities. Disadvantaged as well as gifted learners are objects of support, that can:

- be directed at different areas (such as cognitive skills, language developme social skills, learning strategies, subject-specific knowledge, motivation);
- address diverse student characteristics or groups (low achievers, gived students, girls and boys, students with and without an immigrant backgrostudents with special needs);
- pursue different goals (e.g. eliminate learning deficits on evelop in vidual interests); take place in different ways (volumary or complexity or permanent) and finally also be anchored at different level of the classroom or in extracurricular activities).

DIFFERENT WAYS TO SUPPORT LEARNER.

There are different ways the service of the service

- additional training, rses, cla
- diverse learning me ds, a aches a rrangements
 - ship, Oper truction and Learning, cooperative learning
 - la. -sensitive tea

ive App

- erent. individualisation, adaptive teaching
- hing (e.g. porove learning strategies), support & development plan
- lvantage co

e.g

4 **DIFFERENTIATION**





Pham (2012): Differentiated Instruction And The Need To Integrate Teaching And Practice

Differentiation is significantly relevant for effective inclusive teaching in heterogeneous groups (Amrhein & Reich 2014). Differentiation is a collective term for didactic, methodical and organizational strategies, in order to challenge and homogenise small groups of learners taking into account the diversity of learn er differences and learning needs and interests within the same classroom ove a certain period of time (Stradling & Saunders 1993; Tomlinson et al. 2003), i.e., 'the learners' 'way' of learning is differentiated. In other words, all lea rill make progress in their learning, but in different ways. Tomlinson (1999), lea ing expert in this field, suggested that differentiation provide rious lea ing opportunities for students who differ in their readiness levels (what 'kh understand, and can do in relation to the content), the s (affinn s (whic) osity, or passion for a topic), and their learning pro ay be shaped by their intelligence preferences, gender lture, or l ning .e). T linson (2005) defines differentiation as a philosophy of teaching ased on premise • the d; that students learn best when their teacher ences in their romm readiness levels, interests and learnin hief ob ... of differentiation rofile is to take full advantage of every stude ability . nrn (Tomlinson 2001, 2005). According to Tomlinson, teachers can di entiate th als, content, teaching methods, materials and task. ving en nments and assessment according to learners' readiness, interests, ab. vation and self-esteem (Tomlinson m 1999). Thus, a teachⁱ ng setting to as individual promotion must be changed with res *t* to:

- less teacher-c rechaided le ons
- divers nethods conter

hn.

more ve for open, collective, cooperative and individualised instruction

itable, a ted and supportive materials and task orientation & self-evalua-

THEORETICAL BACKGROUND

Differentiation has traces of Gardner's Theory of Multiple Intelligences and can be considered as its pedagogical application (e.g. Gardner 2008; see also Tomlinson & Allan 2000: 21). Gardner's theory recognises that learners are different in terms of their intelligences and talents, and thus implies that teaching should be adapted to best match each learners' individual abilities and needs. Another theoretical concept that is central to differentiation is Vygotsky's (1978, 1982) Zone of Proximal Development (ZPD) (see also Tomlinson & Allan 2000: 18–19). The aim of differentiation is to discover the learner's actual development stage and tailor the teaching so that it corresponds to the learner's ZPD.



Source: Created by author, based on Tomlinson 1999, 2008

The intent of differentiation is to maximise each student's growth and individual success by meeting each student where they are at the time and assisting them in the learning process. Differentiation is based on a set of beliefs that:

- students who are the same age differ in their readiness to learn, their experiences, and their life circumstances;
- differences are significant enough to impact what students learn, the pace which they learn, and the support they need from teachers;
- students learn best when connections can be made between the cu interests or life experiences; and
- teachers should attempt to maximise each student's learning offerent ion is proactive, student centred, dynamic, and rooted in assessment. It is an asises multiple approaches to teaching content and is use of exible groups (Tomlinson 1999).

m and

More in Module 1 of TR INM. it 3: . and Assessment
Differentiation can be further distinguished between:

- Differentiation through learning tasks and more open and individualised tasks, i.e., differentiation through teaching that takes into account the heterogeneity of the learning group and in which the learning processes are not aligned to an intermediate level, but in which all three requirement areas are taken into account (use of speaking and writing aids in the form of picture material, dictionaries, sentence and text modules, e.g. constructing dialogues in concrete situations, speaking and writing about one's own preferences, interests and needs, creating situations in which learned vocabulary can be used (cf. amo others Böttger 2008: 11)
- Quantitative differentiation according to the amount of work (e.g. set further and deepening tasks for fast children, extension of the above-related vocabulary by personal words, labelling of pictures instead of writh the whole text etc.)
- Qualitative differentiation according to the level of difficence additional learning paths (e.g. create your own dialogue after basic source has been given, offer additional word and sentence resterial, so for details and ormation in listening comprehension tasks, give the opperanity to answer questions in one-word sentences, but also encourage creatersolutions, etc.)
- Differentiation according to teaching whods the possible, independent choice of working method, working group, working the working materials; in the sense of learner autoromy, the primers decide for themselves)
- Differentiation accore g to diverse the vial and cooperation forms (independent choice of in bidue bar er or growwork, encouraging mutual help, using experts c.)
 - entiath whrough a variety of media and work tools that consider the differencess wheels (e.g. pictures, writing, providing scaffolds, support system
 - In create teaching situations, it makes sense to use and offer several or even a fiferentiation measures at the same time.

ADAPTIVE TEACHING AND LEARNING

In educational psychology as well as in the international scientific literature, other terms can be found which are conceptually closely related to those of pedagogy. The central concept that encompasses individualisation and differentiation is called adaptive education, which is when Anglo-American countries speak of adaptive education.

5 DISADVANTAGE COMPENSATION

The alignment of study and examination regulations by the so-called disadvantage compensation helps to prevent disadvantages which arise out of disability, chronic or acute illnesses or from family responsibilities during the course of the studies. Disadvantage compensation is not an allowance but compensates disadvantag Since the expected performance is not reduced, it may not affect the assessmen of the performance in the examination and shall not be recorded in the certificates or expert reports.

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EXAMPLES OF DISADVANTAGE COMPENSATION

- Extension of time for exams
- Modification in the method of examination
- Individually adjusted exam/submission de
- Alternative performance
- Permission for the use of technical a
- Writing exams in separate rooms
- Preference in attending the lectures

Basically, the disadvantage compovidual case and the site since the acays be decided depending on the indiantage can vary greatly.



Chapter 4

LANGUAGE IN EDUCATIONAL SETTINGS

1 INTRODUCTION

After PISA 2000, teachers' competences in (multi-) 'Whater all kno build linguistic education play an increasingly importhe sch text involved wo g with lo eacco et tant role in order to address linguistic diversition al. the classroom (Becker-Mrotzek & Roth 2017) and teachers should be concerned about the language dimension in education (Vollmer & Thürmanp educa ntext, 013). oses. The tradilanguage is used in different situations and for ferent tional view is that language is important in lang re lessons. dents learn to communicate and learn about langy in first, 1 ign or L2 classes (language as a subject). However, language is no long goal in itself, but as an important issue for all subjects for many no (e.g. Leisen 1999, 2016; Vollmer & Thürmann 201



Source: Created by author

Instead, language of schooling also embraces languages used for the teaching of other subjects (language(s) in other subjects). As Vollmer (2006) states, language learning and education occur 'in each and every subject in school, in each and every academic/mental activity, across the whole curriculum' (Vollmer 2006: 5) in order to be generally involved in what is happening in the classroom to be able to participate, for expressing an understanding and for interacting with others For example, teachers use language to deliver subject content and accompany ing tasks. Language of schooling does not only refer to the teaching and learning of isolated grammar or vocabulary for everyday communication. Since rent school subjects have their own communication (most often seen in text language is also a tool for subject specific ways of thinking and ommuni ing and knowledge processes (Vollmer 2006: 5). Learners do not only the ne or expression for a specific object. They also learn to us linguist in a content-related and purpose-related, contextual a situatio y appropriate way, which requires high levels of cognitive thinki (see C[,] .nins al. 2001). What the language of subject learning in all non-lin is' subjects e concerned, there are terminologies such as Language ther S sts or Lar age Across the Curriculum (Vollmer 2006, 2007).

Language is the key to successful interv sation o. ncepts which is a prerequisite of deep learning. These forms of co nunication hich are specific to the different academic subjects a. n refer to as subject literacy.

> schooling braces two key components:

subie their own right (literacy, reading, writing, literature, king about lan-

ges used for the teaching of other subjects (maths, biology, history, geogralanguage(s) in other subjects. phy

They are

guages ta

- national languages in most countries
- regional or minority languages in some education systems, such as Corsican in Corsica (France) or German in the schools of the German minority in Denmark (COE 2006)

Another critical aspect of educational language, particularly within the school environment, is the epistemic function (Halliday & Martin 1993). Through this function, both individual and dialogical thinking, as well as self-directed development, are facilitated to attain new knowledge. Furthermore, the use of linguistic acts associated with educational language within the school context is essential. This implies that actions within the classroom are articulated through language, and tasks are executed verbally through this function. Therefore, language serves as a pivotal tool for both acquiring knowledge and expressing professional competence. The language proficiency of the learners is also pertinent for the teach assessment of their respective levels of knowledge, as it serves as the foundatic for evaluation.

LANGUAGE TRIPTYCH

Coyle et al. (2010) describe a 'Language Triptych' in white language and aree roles guage of, for, and through learning.

Language of learning refers to the words and gran as which a uninimally necessary to talk and write about a subject, most often the specific actinical tent alongy, such as photosynthesis in science or treaty in history. Unfortunated in too many all and bilingual education programs, this has often be a unique part of language used – apart perhaps from some minimal correction of compared and

ich students need in order to participate in Language for learning is rigu t students to discuss a topic and agree or disalearning activities. For iple, if we gree, we should provid em wi e resources they need to do this, such as e lang sagreeing. In many 'hard' CLIL contexts, the language reeing an ng teachers are ort studer ith language for learning, either because ctant to they do n how to, or b eel that doing so takes away precious time for it lear

Lan, use through a bing is new language that students can pick up when applying the conking skills in a bing activities. It is often difficult to predict, as it can happen your students work independently on their own projects and chosen topics, and indoing encounter new language.

2 LANGUAGE OF SCHOOLING - WHICH LANGUAGE SKILLS ARE RELEVANT FOR SUCCESSFUL (SUBJECT CONTENT) LEARNING?

Hence, the language of schooling is the basis of all teaching and learning. It is deniably evident that students must have proficiency in the dominant language of instruction, i.e., they need proficient language skills orally, as well riting and reading. Students must have an adequate level of competency h ra comprehend and actively engage in school. For example, reading skills at lot only the key to understanding mathematical and scientific tasks, so a dispensable prerequisite for mastering complex learning tions tha he on real-life processes (OECD, PISA 2012). The langua of schoo presupposes the ability to communicate in everyday situations, and ¹ en, and to , to re produce texts orally and in writing, in the sense of ct .al litera However, it goes far beyond this in its specificity, wh h, among her things, in can be the fact that the production of oral ut ance. cerns of use of ased o. written language (conceptual literacy).

There are specific linguistic and commun tive requirements and patterns, which are typical for teaching and R a in sch contexts, e. g. in the context of teaching and learning of subjects like r music. In this context, school lanet language schooling, which has hardly been guage can also be s transparent and ambigue y codified and on which many learners struggle mightily or even l (Voľ er & 1 rmann 2013: 3).

In school intext, ders and schents use a variety of registers of language of school

veryda, ocial language and

cademic la.

chese registers are often referred to Cummin's (1979, 2000) terminology, the Basic Interpersonal Communication Skills (BICS) and Cognitive Academic Language Proficiency (CALP).

> The concept of registers is typically associated with variations in language conditioned by uses rather than users and involves consideration of the situation or context of use, the purpose, the subject-matter and content of the message, and the relationship between the participants (Romaine 1994: 20).

2.1 SOCIAL LANGUAGE

Social language is associated with every day, casual interactions; it's the language we use to order an ice cream, talk with a neighbour, or chat with family members. Children learn their home language, they learn several different language styles, which vary depending on the setting, the speakers, and the goal of communication. These styles are also called registers.

A register is a variety of a language used for a specific purpose and audience in particular social setting. Registers are simply a particular kind of language beh produced within the context of a social situation. Below are three ways of saying the same thing, depending on the relationship between speakers and be stance (from Gottlieb & Ernst-Slavit 2014: 2):

I would be very appreciative if you would make less noi Please be quite.

Shut up!

Throughout the day a person may use several a grent region or several a grent region of the several a great se

	Mes	To Whom	Context
bile (nurse, 37 ears old)	"That's the und clinically that's what's accessable."	patient	work
	Vhat's up, Anne? I haven't seen you ars."	friend	grocery store
	"Wayyo go, Rudy, you nailed that one."	son	basketball practice
	"let me know where u r when you have a min. thx, luv u"	teenage daughter	text message
	"I never had the opportunity to meet your father, but I know you talked highly of him, and I know your loss is great. Our condolences to you and your family."	neighbor	written message on a card

Figure 8 Different regist of langua

Source: Extracted from Gottlieb & Ernst-Slavit 2014: 3

In schools, this is the language students use in the playground, cafeteria, or in hallway. However, social language is also very much used in classroom dialog, as illustrated in the following examples from Gottlieb & Ernst-Slavit 2014: 3):

Turn to your elbow partner and figure out the answer. (Grade 2 teacher to students) Hold your horses; we are not there yet! (history teacher to school students)

Dunno how to save my work. (Grade 4 students to teacher)

Social language (or BICS), is less cognitively demanding and often includ. non verbal cues and context clues to meaning; for this reason, stuoften l ome proficient in social language within 1–2 years of being in schools in States (Thomas & Collier 2002). In Cummins' research rant lear nree years of ed-Canada, most students were found to achieve BICS er two inçl ucation. Cognitive processes linked to bial langu : iden ving specific information, naming objects, and matching and sor *s*jects int ets.

BASIC INTERPERSOMMUNICA, ILLS (BICS)

Basic Interpe al Comm tion Skills (BICS) are basic language skills that speakers need to d with j ryda mmunication situations. Cummins introduced the BICS develop in the social environment of a lane1 mmins 1 ce contextd and place low cognitive demands on the speaker. gua arner ngs are infe from the context and signals from the interlocutors facial expressions, intonation). In contrast, Cognitive Academic Language Pro-(g P) is necessary for mastering demanding linguistic tasks. ficien



Cummins, J. (2008):. BICS and CALP: Empirical and Theoretical Status of the Distinction

2.2 ACADEMIC LANGUAGE

The social language, which may be well mastered by most learners, is not sufficient to adequately understand, think and speak about these diverse, complex and increasingly abstract contexts and texts in the subjects, and finally to (re)produce them in writing. Instead, learners need an academic language to acquire new or deeper understanding of the content and to communicate that understanding to others (Bailey & Heritage 2008; Schleppegrell 2004). Academic language is another aspect of the language of schooling and is widely used now in education to rel to more specialised and formal language characteristics of the school subjects and the aspects of language proficiency needed for thinking, and for ing and comparing ideas (Beacco et al. 2015: 14). The academic language that is crue school success is very diverse, often subject-specific and is op the context learned efficiently where the students need it – i.e., in sject les s. Since each subject uses its own specific words, phr ions, airin n academic language is often seen as a matter of acquiring n alist voo ulary (e.g. in science: 'electrolysis', 'ion', 'neutron'; in liter. e: 'iroh magery ragedy) and appears to all learners (may they be foer) like a also L gn, L≥ foreign (additional) language (Beacco et al. 2016

ibbons (2015): Scaffolding

COGNITIVE ACADEMIC INGUA OFICIENCY (CALP)

Cognitive Academic La lage Pr .P) develops through social interactions CS after the early stages of schooling, to from birth but ted from ome nat children reflect prima uire in school and which they need to use lang y through the grades. The notion of CALP is effective v are to pro al context of schooling, hence the term academic. Academic language ic to i e defined as 'the extent to which an individual has access to and icv car d of the or written academic registers of schooling' (Cummins 2000: 67). com

Creations introduced the term in the 1970s (cf. Cummins 1979). However, the construct cademic language proficiency does not in any way depend on test scores to support ither its construct validity or relevance to education.

There is a realisation that there are different kind of words within a curriculum that students need to learn, and which are classified differently.

The academic language necessitates more than knowledge of single words to describe complex concepts, thinking processes, and abstract ideas and relationships. The academic language needed for students to access disciplinary content, learning materials or text types and successfully participate in cognitive-pedagogical activities and assessments involves knowledge and ability to use specifilinguistic features associated with academic disciplines (Vollmer 2013; Cottlieb & Ernst-Slavit 2014).

Learning a school subject, then, means being able to comprehend and provide by types of texts or genres (both oral and written) through which the powled in the subject is communicated (For a thorough discussion and illustration on the of school genres typically used in CLIL, see Llinares (2012,

Academic language is not a set of skill that Englis earner an secup from the environment but rather is learned through scaffold to context support and is facilitated through explicit teaching.

Paying attention to literacy means takent into a count that unrerent school subjects such as science and history have heir own experises of communication, most often seen in the text types expenses) when are typically used. For example, a typical genre in sec. I is the larratory report (the writing up of an experiment) and in history, it could be a bit prical account, which not only re-



nctions of academic language use

HARACTER JRES OF

ures an

In contrast to acquial informal language: higher frequency of longer complex sentences, impersonal statements and passive voice, abstract terms, nominalizations, complex compound words, particular figurative expressions and lexical or set phrases (e.g. 'crux of the matter', 'point of view'), clarity of expression and low redundancy, condensed texts and complex messages...

SOME MAJOR FUNCTIONS

communicate complex facts, contexts and arguments, support higher-order thinking, abstraction and concept formation, establish coherence of ideas, avoid personal involvement, facilitate comprehension for distant 'audiences', support arguments with evidence, conveys nuances of meaning, moralising statements through 'boosting' or 'hedging' etc....

Source: Created by author, adapted from Beacco et al. 2015: 26

lates historical events but includes some explanation of them. In table 3, there are examples presented which illustrate the nature of academic language in context, in close connection with content-based language. A distinction is made between content language and general academic language use within a number of subject areas. Some authors distinguish more precisely between four aspects of academic language features, namely content-specific vocabulary, general academic vocabulary, grammatical structures and cognitive-linguistic functions. Furthermore, academic language is characterised by the specific linguistic features associated with academic disciplines, including discourse features, grammatical construtions, or language modalities and content areas (Gottlieb & Ernst-Slavit 2014).





Academic language operates within a sociocultural context that lends meaning to oral or written communication. The sociocultural context of academic language learning encompasses the interaction between the student and the learning environment, including the topic or theme of the task or situation, the genre or text type, and the participants' identities (WIDA 2012). Academic language (or CALP), is much more cognitively demanding and often appears in situations without many context cues (such as a non-illustrated reading passage or a lecture-styl lesson without visuals or manipulatives.) How quickly students acquire academi language varies widely due to multiple factors ranging from students in veduca tional experience to the quality of teaching.

Research has discovered that the acquisition of English skills a sary four cademic school study typically requires a period of five to seven years, setting up to ten years (Thomas & Collier 2002). The duration are sets variapending on factors such as the learning environment and the 'coners' existing knowledge of both the subject matter of the language its

Language support in academic language is prefore in portant is k of the educational system (e.g. schools) and of all teach who can vely counteract educational disadvantage.

re

mensions:

Dimensions of Academic Lar wage

Academic language can be divideo .

ise

- discourse level
- sentence level
- word

Fach on on having cere characteristics that reflect the quality, quantity, acicy, convexity, and sophistication of language use in a discourse, sentence, a vord/phr levels of academic language use.

Researcher Averil Coxhead developed the Academic Word List at the Victoria University of Wellington, New Zealand. The list was developed by analysing a corpus of academic written

texts to find out which words occurred most across a range of 28 subject areas in four academic disciplines: Arts, Commerce, Law, and Science. The Academic Word List is a useful English resource for lecturers and students. You can browse the list in the Oxford Advanced American Dictionary and the Oxford Learner's Dictionary of Academic English.





Gottlieb & Ernst-Slavit (2014): Academic Language – A Centerpiece for Academic Success in English Language Arts



Table 4Dimensions of academic language

	ACADEMIC LANGUAGE	GENERAL AREAS OF COVERAGE
	Discourse Level	 Text types Genres Voice / perspective Cohesion across sentence (e. g., through connectors) Coherence of ideas Organization of text or speech Transition of thought
	Sentence level	 Types of sentences - simplement and, complex. compound-complex Types of clauses - relate, coordinate, embodded Prepositional phrases Syntax (for related gram. and al structure)
	Word / Phrase level	 Vocabulus - general uncialised, technical academic words and uppressions Multiple multiple and words Nuclealizatit Idiomatics includes Double entendres
	Source: Created basetheres	apted free Gottlieb & Ernst-Slavit 2014: 3

3 COMMUNICATION SKILLS ACROSS THE CURRICULUM

In school and in life, students face a diversity of circumstances that require language skills. The four core communication skills that are important in all subject areas in the curriculum are writing, speaking, reading and listening. Students need to express and interpret facts, data, thoughts and feelings, both in writing as well as speaking. Communication skills are important for expressing ideas ab subject content and to help learners work well together. This includes communication functions (purposes for speaking or writing) such as: Giving examples describing a process; expressing conditions; describing trends; talking purpose; defining, expressing agreement or disagreement; clarifying what has been said; describing cause and effect; explaining an opinior deas Apress. and opinions; generalising; giving instructions: giving app timate nber interpreting data; predicting and justifying physicitions; pi **nt**i solutio suggesting, etc.



Listening and reading literacy are essential for learning since they enable students to acquire insights and information, and to achieve success in communicating with others. Life within and outside school affords many listening opportunities, but some students fail to seize them because they let their minds wander or they may concentrate on what they want to say themselves rather than on what a speaker is saying.

Learners must develop an understanding of the variations among speakers and the importance of adapting their speech to different situations. They should gras the notion that speaking styles have an impact on listeners. Consequences pace, volume, and pronunciation accuracy may significantly vary dependent of on context. It is beneficial for students to recognise that speech should be adjusted in terms of formality, such as when addressing a judge, a teacher, a part of the distinct Additionally, they can gain valuable insights by learning the distinct among different dialects.

According to PISA, reading literacy is Lined as th bili* o unde and, use, evaluate, and reflect on texts, as well as be s engage y h them in prepa. order to achieve one's own goals. Accor ling to is defn ing literacy is the basis for developing ones own kno tential and for participating dge an in society. To meet this broad definition ncy, the PISA test covers reading different types of texts and to be at differ levels of a ficulty.

Writing is the final product of seve rar acts that are hugely challenging to learn simultaneov acts are note-taking, identifying g these sepa g and editing. Both young and old people can ena central idea, out ۸ng, drə counter the disc ock' if they engage in more than one or two of aging Ater' these activ is diffic to start writing a report, for example, withis al otes to port it. Often, the more detailed an outline, the out a cen Il idea al easier writing. Peace equently find that they can finish faster by writing a kly and then editing and revising this draft. draft

4 LANGUAGE REQUIREMENTS IN SUBJECT TEACHING

A model developed by Vollmer et al. (2013) describes demands and expectations of school language, that has emerged from curriculum analyses as well as from further theoretical considerations. It outlines four dimensions that are closely interrelated:

- Cognitive-pedagogical activities
- Cognitive activities / Basic discourse functions
- Comprehension & production of typical text types
- Linguistic/communicative means of realisation



Source: Created by author, adapted from Vollmer 2010: 7

Cognitive-pedagogical activities

The typical level of subject-specific language teaching in the school setting. Language action is related to the accelerated acquisition of knowledge, skills and dispositions. For the students it is therefore a matter of, among other things, following the subject discourse in class, using the provided media, work tools and methods, building up cognitive processes, re-structuring and differentiation knowledge, communicating and presenting work results as well as reflecting of their own approach in consideration of the cooperation with others. On the basis of our data and further lesson observations it is possible to construct the proat least five fields from the learners' point of view of language learning, with others.

There are five areas of mental-pedagogical activities in school learning

- Abilities to participate successfully in school- ar subject-1 ed interaction and communication
- Abilities to retrieve, gain or infer information
- Abilities to structure, adapt or external know
- Abilities to present, support and neg ate result new knowledge
- Abilities to reflect about learning (procert and process) and to improve/optimise both

The five competence of the set of a complex nature. They refer to a broad spectrum difference anguistic-cognitive operations, i.e., they make use of different discouse functions (mension 2) and involve the comprehension and production difference chool-band text types/genres (Dimension 3).

iscoul inctions

Soments have perform different linguistic-cognitive activities to develop a rule of cognitive kills as well as language for thinking that is related to acamic language proficiency. In other words, students' language through cognitive discourse functions (CDFs). CDFs are the central linguistic actions in the classroom. Discourse functions (cognitive discourse functions, CDF, or academic language functions) can be seen as a 'bridge' linking all three dimensions – con-

t, literacy and language (Morton 2020). In the context of (bilingual) education, Gottlieb (2016) calls discourse functions the 'key uses of academic language'. They refer to a broad spectrum of different linguistic-cognitive operations – such as analyse, reason, hypothesise, describe, report, classify, compare, explain, persuade (e.g. Dalton-Puffer 2007; Chamot & O'Malley 1987; Zydatiß 2005; Vollmer 2006, 2008, 2009). There are different classifications for CDF. Zydatiß (2013: 324) names three macro functions: describing, explaining and evaluating. Vollmer (2011: 1), on the other hand, lists eight functions: negotiating, naming, describing, reporting/narrating, explaining, arguing/positioning, evaluating, simulating/modelling.According to Dalton-Puffer (2013) there are seven cognitive discourse functions: classify, define, describe, evaluate, explain, explore, report.



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The discourse functions, that are linked to Bloom's taxonomy, are not normally seen as essentially linguistic in nature, as they are usually described as 'thinking' skills. However, it is not difficult to argue that these objectives are actually verbal in nature. Not just because they can be expressed as verbs, but because they require quite specific language resources in order to be carried out. For example, evaluating requires the use of linguistic resources to judge the qualities of people and appreciate the qualities of things.

It is through these CDFs that learners build and structure knowledge, which allows them to make sense of new content, for example by:

- describing and labelling the parts of a cell
- explaining and defining a complex process such as photosynthe
- comparing different types of volcanoes
- assessing and evaluating the opport unities/three s of hyperbluck of hype



Source: Created by author, ddapted from Dalton-Puffer 2013: 234

Discourse functions can be found in the core curriculum for different subjects, they are also used across disciplines, and differ in their technical implementation:

Identify and describe the work environments in the manufacturing, engineering and technology fields

Extract 1. Example from current South African syllabus Engineering Fundamental NQF Level 2

The students inform themselves about tasks, work requirements, activities and exemplary work processes. The students analyse electrotechnical system of the plant, device, assembly and component level, as well as the interrelations, between the individual levels. In doing so, they read and creater and documents.

Extract 2. Examples from current German sylv, as Electric Engineering [Inselated by the author]

In the works of Beacco (2010), Vollmer (2010), Juper (2010) and Lhouser-Lammerskitten (2012), an attempt was made to iden by a number of discourse functions that are necessary for learning and teaching in four shool subjects: Science, history, literature and mather

Comprehension & productional text type

the five fields of activity can refer produc-The cognitive-linguistic erations of materials and documents, which tively as well as receptive de vari to a are referred to ge lise is as texts hese texts can be verbal, but also non-verbal, th r they can be realised acoustically, they n be in wi in a media or multi-media form. A frame of reference should conv possible texts to be used, analytically processed or prostructur e cosmu duced in subject les

57

LITERATURE	SCIENCE & MATHEMATICS
analyze	analyze
argue	argue
classify	classify
compare	compare
describe / represent	describe / represent
deduce	deduce
define	define
distinguish	distinguish
enumerate	enumerate
explain	explain
Illustrate / exemplify	Illustrate / exe
infer	infer
interpret	interpret
judge / evaluate / assess	judge / eva te / z .ss
correlate / contrast	contrelate / t
match	m.
name	name
prove	prove
recount / narrate	count
report (on) a	ort (on) a
discourse	Lourse
summarise	su, arise
specify	
assess (also mer ined above	assess (also mentioned above)
outline / sketc	calculate
	outline / sketch
Source: eated by a based of	acco et al. (2010: 20-21). Vollmer. (2010: 21). Linnewe-

Table 7 Relevant discourse functions in literature, science and mathematics



rskitten (201



Linguistic/communicative means of realisation

Dimension 4 is referred to as text competence and is not based on a universally accepted scientific definition of text, which, by the way, does not exist. On the contrary, it is assumed on the working level that it refers to a self-contained and in principle describable complex structure of utterances, which consist of several statements (sentences), which are connected with each other in content and form. Textual competence or more precisely oral and written discourse ability would thus be the ability to make a strategically guided selection from inventories of linguistic means, taking into account situational factors and one's own search communication intentions. Also, it would mean to condense these linguistic elements into texts or, in the reception of texts, to derive the construction of specifi meanings and the use of specific discourse strategies from the use of specifi meanings and the use of specific discourse strategies from the use of specific means, Schmölzer-Eibinger 2008).

It follows that for modelling a frame of reference in dimention 4 cleast fo components have to be considered:

- Discourse strategies
- Textuality criteria
- Linguistic resources
- Communicative activities / skill areas.

COGNIT

tiple, ng to

ADEMIC L FICIENCY (CALP)

ver, texts and text types can be grouped under various aspects, e.g.

elation to real e. fictional texts vs. non-fictional texts (= non-fiction and utiltexts)

domains of use, e.g. didactic for school vs. authentic; private vs. public, general vs. specialised

the degree of conventionalization, e.g. personal letters vs. business letters; narrative of experience vs. accident report

cic functions, e.g. expressive function, representational function, prompting function, poetic

• forms of representation and the type of sign system used, e.g. body language, images, image sequences, numbers/statistics, schemata, maps, text-image montages, other discontinuous texts

• media realisation, e.g. written/printed texts, spoken texts, presented texts, text-image, film, television, computer animation, Internet offerings.

5 VOCATIONAL LITERACY

Vocational literacy refers to the ability of individuals to read, write, comprehend, and effectively use information related to a specific trade, profession, or occupation. It is a specialised form of literacy that focuses on the knowledge and skills required for success in a particular vocational or technical field. Vocational literacy is essential for individuals pursuing careers that demand specialised knowledge and expertise beyond basic reading and writing skills.

Students who, due to their limited linguistic abilities, have problems uses ing tasks, work instructions, technical texts, etc., have difficulties to foll the lessons at TVET colleges and do not actively participate in the second.

Students must understand operating instructions and the string of pro-Last but not least, advising customers requires high chnical squage which not only L2 students are able to cope with the a limited sent.

6 LANGUAGE PROFIC NCY DEVELOPMENT STANDARDS

Language proficiency is a range of the state of the state

Globally, primary tems used to evaluate language proficiency. ar om the United States, namely the guidelines Two of e system. the American council on the Teaching of Foreign Languages (ACTFL) rovide le, developed by the Interagency Language Roundtable. The ILR the ILL e broad levels, ranging from zero to five. On the other hand, in consists sd ope, there is the Common European Framework of Reference for Languages CEFR) scale, which comprises six levels.

In the context of school, the need to develop academic registers is a strong argument for all learners to learn through programs that integrate subject teaching the its associated language. This has implications for both program planning and for assessment.

DEFINITIONS OF LANGUAGE PROFICIENCY

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There is no universal agreement upon definition f ne tei langua ĥcy, language skills, or knowledge of language. Within etical h cs, the latter term is often used interchangeably with Chomsky's (196 ncept of h c competence. Linguistic competence refers to the interest underst ng of a native speaker regarding the grammar of their language, enabled to g ate and comprehend an infinite number of sentences. Hymes (1972) introdu on of communicative cometence and a sociolinguistic petence, which encompas y's linguistic co. ly use language within a specific communicaaspect-namely, the abj to appro tive context. The conce of com cativ mpetence has played a significant role in research on se lan sition, lar ge instruction, and the development and ficiency a implementati langua ments (Canale & Swain, 1980; Bachman, 1990). C. (1979, 198 es between two types of language proficien-

rsonal communicative skills (BICS) and cognitive/academic language

Nevertheless, it is presentatic to talk about overall proficiency in a language without the context in which the language will be used. Even a fluent mothcongue speaker of English will not be proficient in every possible context: There will always be some subjects that they know very little about, so they can't talk about them. Hence, it is not simply a matter of getting the basic grammar correct, but of knowing the ot appropriate language to use in a particular context, or, in other words, to know how to use the appropriate register.

6.1 CEFR LEVELS OF LANGUAGE PROFICIENCY

The Common European Framework of Reference for Languages: learning, teaching, assessment was published in 2001, approximately 30 years after work on drafting the Threshold level (B1) started. The main aim of the document was 'to overcome the barriers to communication among professionals working in the field of modern languages arising from the different educational systems in Europe It provides the means for educational administrators, course designers, teacher trainers, examining bodies, etc., to reflect on their current practice, where iew to situating and co-ordinating their efforts, and to ensure that they mean the needs of the learners for whom they are responsible' (CEFR 2010). Another clearly stated goal for the CEFR is to enhance international co-operation.

There are 56 scales of language descriptors in the CF several la 2e functions, five different language skills (listening, ding, sr en production, spoken interaction and writing) and s. lifferent l ls (₽ .2). Equ y important, lguage learnthe CEFR addresses a number of issues in reption to ,aage and ing, for instance, communicative competence age acquisition, nguas language teaching, language curricula assessment in both formal d langu and informal contexts.

Table 8Descriptions for language proficiency

Native speaker Near native / fluent proficient user (C2) Excellent command / highly proficient in spoken and proficient user (C1) written English (for example) Very good command indepen ISE Good command / good working knowledge indepe (B1) nt Basic communication skills / working knowledge ıser (A Source: Created by author, based on Council of Europe

6.2 'LANGUAGE OF SCHOOLING' AND LANGUAGE PROFICIENCY LEVELS IN SOUTH AFRICA

In South Africa, or in Africa in general, there is no standardised definition for what it means to speak a language. The only existing definition is provided by the Organisation Internationale de la Francophonie (OIF), as stated in Maurer (201 3): A francophone is defined as 'a person able to express themselves in French, r gardless of their level or their mastery of other skills such as writing expending.' It is likely that this definition encompasses speakers at the A2 level and provided the though it is not explicitly linked to the CEFR levels.

However, it remains uncertain whether reaching the A2 level imp sse lg Cognitive/Academic Language Proficiency (CALP) in th ge, as no mark has been established for this. Nevertheless, th ∠ is a dit nt benchmark related to the minimum language profilency requ d to p ae te ary educavel. Many tion in that language, which is often considered to st the B universities use the B2 level as their require he Univ nt, wh ty of Cape Town in South Africa sets the higher am requirement, ndara 1 as its still below the highest C2 level.

According to Albaugh (2014), the estimate a verage frace ophone population in the francophone countries of a supervision pharan arrica is 18%. However, considering the definition of who qualifies as a frace there, it suggests that a significantly lower percentage of copies an ancophone ALACA possess sufficient proficiency in French to pursue artiary effection in that language.

However, in Bots has a Generic lertificate of Secondary Education 'C' pass in English s ins to react the V correst and to the B2 level.

Langua, of teaching and carning in South Africa includes the home language, ch is the enguage first acquired by learners and the first additional language. Fillen grade 4, we lents start using their additional language, English, as the Lanrege of Learning, and Teaching (LoLT). Many South African schools do not offer the home languages of some or all of the enrolled learners but rather have one or two languages offered at Home Language level. As a result, the names Home Language and First Additional Language refer to the proficiency levels at which the enguage is offered, and not the native (Home) or acquired (as in the Additional) guages.

Home Language level provides for language proficiency that reflects the mastery of interpersonal communication skills required in social situations and the cognitive academic skills essential for learning across the curriculum.

The first Additional Language level assumes that learners do not necessarily have any knowledge of the language when they arrive at school. The focus in the first

few years of school is on developing learners' ability to understand and use the language-basic interpersonal communication skills (cf. Cummin 2002).

In Grades 2 and 3 learners start to build literacy on this oral foundation. They also apply the literacy skills they have already learned in their Home Language. In the Intermediate and Senior Phases, learners continue to strengthen their listening, speaking, reading and writing skills. At this stage, most children are learning through the medium of their First Additional Language, English, and should be getting more exposure to it.

Greater emphasis is therefore given to using the first Additional Language for purposes of thinking and reasoning. This enables learners to develop their cognitive academic skills, which they need to study subjects like Science, n. ¹ish. They also engage more with literary texts and begin to develop an aesthetic a imaginative ability in their additional language. By the time Grade .mers ge ip clud-10, they should be reasonably proficient in their first Addit ial Lang ing both interpersonal and cognitive academic kills (Stan .022). I et ıe study South African TVET lecturers also stressed this e. ally in tes ind examinations where good language of teaching and ing is students must to formally communicate their un standi. hid.: 303).

Students should also be exposed to optimal condoons during opin primary and secondary schooling for the developement of Engline proficiency at a level needed for tertiary learning at TVET colleges or 0.

7 SUBJECT LITERACY - OR WHAT MAKES LANGUAGE OF A SUBJECT SPECIFIC?

As mentioned above, the forms of communication which are specific to the different academic subjects are often referred to as subject literacy. Linguistic activity in all subjects is diverse and demanding, which can be seen in the large numb of operators and their different requirements with which the lesson content is developed and reproduced. At the same time, many of them cannot be the ly distinguished from each other, which makes orientation even more to be They often have different functions in different subjects. In addition, the ware linguistically more or less abstract conventions of representation which not be mastered in reception and production in a technically appropriate ma.

Examples (that all require certain linguistic means pulliar to subject in question):

- Symbolic languages of mathematics and vience,
- experimental protocol,
- interpretation, but also
- non-linear texts like label diagrams atistics, takes, etc.

Six aspect of sub-

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n understap , in-depth (the meaning of an utterance, a text, a pro-

- 2. municating and negotiating knowledge
- 3. Reference on the acquisitional process, the learning outcomes and their personal as well as a luses
- 4. Applying knowledge to and within other contexts
- 5. Participating in the socio-scientific world
- 6. Transferring generalisable knowledge, skills, attitudes

7.1 STEM SUBJECTS AND THE ROLE OF LANGUAGE

Traditionally, STEM subjects have been looked upon as knowledge subjects or nonlinguistic subjects that have relatively little to do with language. Today, many stakeholders view this differently: 'Whatever the subject, all knowledge building in the school context involves working with language' (Beacco et al. 2010: 6), i.e., at all levels of STEM education, language plays an important role (van Djik & Hajer 2016: 537) and the acquisition of domain-specific language is one of the aims of STEM classes. The abstract cognitive processes associated with learning science and technology demand the application of Cognitive Academic Language Proficiency (CALP) thinking and skills, as these processes often involve decont lised knowledge. Research suggests that if students do not develop CALP in then language, it becomes considerably challenging to acquire it in anguage (Cummins 2000; Ball & Lindsay 2010). Students with limited demic cess to language proficiency achieve less conceptual derstandi n mə' mati han their more language proficient peers (Secada 1992).

A major challenge to students learning in STEM sub, is the above anguage in which science is written (Snow 2010) – in parcularly students with a migrant or minority background, and it is important to ensure out these students achieve according to their abilities.

According to Sibanda & Graven (2018) acc natics learning and successnat. ful interpretation of assessm standing of the language ends on the of teaching, learning and essmen or performance in mathematics is theree profi fore linked to poor langu uch 🤇 ack of it (Reddy & Mahavidyalaya 2016). Learning to nathem ally is central to grasping mathematnm ical concepts.

A construction of the second s

Vington & Osborne 1): Language and Lacy in science education (Forward & Introduction)

7.2 STEM SPECIFIC LANGUAGE REQUIREMENTS

Although school subjects share common patterns of language use across the curriculum, for domains, such as science and mathematics, it has long been established that many students experience grave difficulties in mastering the language that is an inherent part of the content (Wellington & Osborne 2001), and that t language used in the lessons and in the textbooks appears to the learners as a foreign language (cf. Leisen 2016). Generally, the language of science comprises various types of words, and many of them can pose challenges for und ding, e.g. there everyday words (such as power or energy) that can be a proble wh used in science context (Wellington & Osborne 2001: 17). Texts when the ar onfronted with in the science classroom, for instance, differing sign. texts in other school subjects (see Fig. 13). The texts st d in scie. few stories or narratives (compared to history or lage as oject), but instead display the following character S:

- They are factual, hierarchically organise (topic > copic > det s and facts) and dense (low redundancy).
- They frequently use a variety of mode of representation (texts, photos, videos, diagrams, graphs, charts, math and classifier synchronic etc.) and students are asked to translate informer from on mode to another.
- Emphasis lies on explicit description aring, contrasting) and procedural language as used have tions and reports.
- Statements are based or backs of their than on opinions and emotions, thus impersonal type ast along perfective) is often avoided with frequent use of passive onstructions without the identification of actors and agents and frequence of impersurbations.

In the is a standard presence of technical terms and nominalizations in the stantific discore on the lexical level. Some of these words, such as molecules a buoyant, are new to the students and are specific to the scientific community. Others, like force, object, and solid, are familiar to the students but hold distinct or more precise disciplinary meanings within the context of science. Additionally, there are numerous words that are commonly used in academic settings, such as bmersed, displaced, fluid, and impact. On the morpho-syntactical level, students often encounter complex syntactic structures, such as expanded noun phrases, extended attributable clauses, subordinate clauses, and grammar words that indicate local, temporal, modal, and logical relationships within a sentence. These structures pose challenges for students to navigate and comprehend the intricacies of the language used in scientific discourse.

Figure 13 Archimedes' principle



FINDINGS ON DIFFICULT VOCABULARY IN SOUTH AFRICAN SCIENCES CLASSROOMS

In their research on language in South Afrcian physical science high school classroom in Grades 10, 11 and 12, Semeon & Mutekwe (2021) derived levels of difficulty of meaning of word, for example: 'dehydrated', 'constant', 'conserve', 'concept', .evacuate', 'negligible', 'source', 'function', 'limit', 'retard', 'linear', 'factors', 'valid', 'characteristic', 'generates'.

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Most striking findings are that even the participating teachers faced difficulties in differentiating between non-technical and technical vocabulary, resulting in their inability to comprehend the discourse within the science classroom.

Oyoo (2017) has uncovered that, consistent with findings in previous research, South African students also encounter challen when it comes to grasping the meanings of common work when they are presented within a scientific context. The prince issue observed pertained to learners' difficult in distinguing be tween the familiar everyday meanings of work as used in the day language, and the new meanings of the same words we employed within the scientific context.

7.3 SOME C AMMA CAL PROBLEMS IN SCIENTIFIC ENGLI:

and non vive spectors face similar difficulties in scientific English. Both p ti These o nges primarny anse from grammar and the intricate relationships rather than vocabulary. These difficulties can be classified into een te 1 category Interlocking definitions, technical taxonomies, special expressé s, lexical dense, y, syntactic ambiguity, grammatical metaphor, and semantic Ascontinuity. These features are interconnected and tend to occur together as defining characteristics of scientific discourse. They are not arbitrary but have developed to fulfil the requirements of scientific methods, arguments, and theries. As learners gain proficiency in these features, they also enhance their derstanding of scientific concepts and principles. The most effective tool for aiding students in comprehending scientific English is functional grammar, which allows for the analysis of any passage within the context of the discourse (Halliday & Martin 1993).



7.4 EXAMPLE FOR MATHEMATICS

The language requirements of the mathematics classroom have three main elements:

- the language conventions which are specific to mathematical genres, including different representational modes and highly specialised symbolic notation for mathematical formulas,
- the meaning-making activities of the mathematics classroom and the challenge to describe and interpret problems of daily life in order to solve them mathematical means,
- everyday language as used in informal in-school and out-of school contex

They indicate one or several levels of language competence wat young a grant or minority learners need to have in the language of schooling in order to do will in mathematics and history/civics (Table 9, 10). In this contex well refer to minimal standards, i.e., the minimum that student, wells be a weto do includer to learn and make progress in the subject.

Students are not only required to understand, us and explosion multitude of technical mathematical terms, which are often all red to be the main obstacle of successful learning, but they are also explosed with many other verbal challenges:

- describing, interpreting and model and problems of daily life in order to solve them by mathematical nears
- making thought and variable calculates, transparently and justifying them,
 giving illustive explanation calculates and laws,
- pressing one of which calculations, transformations, constructions and argument ions in a that is comprehensible and traceable by others and approve ate with respect to the mathematical object,

ing assertions and giving reasons for them,

uderstanding and reproducing proofs and counterexamples.

Table 9CEFR levels required for listening in history / civics and mathematics (both age
groups)

		HISTORY/CIVICS	MATHEMATICS
	Understand factual information and explanation	B2	B2
	Understand instructions and directions	B2	B2
	Understand arguments and reasoning	B1 - B2	B2
	Follow subject-related conversation	B2	
	Understand audio-related materials	В2	В2
	<i>Source:</i> Created by author, adapted from Mo	əl. 2019.	
	Table 10 CEFR levels required for hsgroups)	in his y / civics and ma	thematics (both age
		HISTORY / CIVICS	MATHEMATICS
	Drig e	B2	B2
	Explain	B2	B2
	State facts, outline, give an account of something	B1 - B2	B2
	Express opinions, discuss	B2	B2
	Express arguments, prove	B1 - B2	B2
	Summarise	B2	B2
	Define	B2	B2
Table 10 (continued)CEFR levels required for listening in history / civics and mathematics
(both age groups)

		HISTORY / CIVICS	MATHEMATICS	
	Evaluate, interpret	B2	B1-B2	
	Compare and contrast	B1	B2	
	Work with forms, tables, charts, graphs, etc.	B2	B2	
	Make oneself understood and clear up misunderstandings / misconceptions	B2		
	Talk to teachers and classmates	B1 - B2	1 12	
	Ask for clarification	В2	2	
	Respond to what people say		B"	
	Interact in teamwork	52	B1 - B2	
	Give a presentation or table subject matter des in ch	В В2	B2	
	eated by whor, adapted from Mo	e at al. 2019: 413		

8

STUDENT PERFORMANCE AND LANGUAGE PROFICIENCY

Language and learning are inseparably connected: If language skills are lacking, school learning goals will not be not achieved There is considerable research that links students' word knowledge to their academic success. To succeed in an educational context, students need to master this different type of language than they d in everyday non-academic situations. If

lack of language skills and abilities, they do not follow the lesson or do stand. As a result, they may miss the subject-specific teaching roals. The ore, students need to master the varieties of academic language use. 'iffere. ubject matters, and to be able to interact fluently with peers Fren if mo language is used as the main language(s) of schoolin rat a num IS IIK lage for rnip purposes. learners will still not be using the first or home lar They may underachieve, not because our ny lack of ility at beca of their difficulties with the language (Vollmer 201

STUDENT PERFORMANCE AN. SUSH NGUAGE PROFICIENCY (ELP) IN SOUTH AFRICA

At South Africe of VET collected Lück & Magxaki (2019) found a complex language situation, with part students aform the and English identified as a major barrier. In the study of Standon et al. (22) lectures noted that students' English language proficiency (EL mass often and our to perform higher order skills (such as the instruction

, and that their answers were ited because or men poor ELP and vocabulary (p. 303). in most classrooms there is a lack of effective com-Acco to the diversity of languages amongst the stumunicati arers. Lecturers, just like the students, are also dents and th of diverse languages because they come from all over the country and some of them even from outside of South Africa. However, TVET lecturers are well aware of the fact that there is a crucial link between the English language proficiency (ELP) and academic performance (AP) of their students, that they employ a variety of strategies to address associated problems, but that they feel these are often insufficient and ineffective in the face of students trying to learn in a second language (Stander et al, 2022).



Lück & Magxaki (2019): Language in a Life Orientation class: Complexities and contradictions



Stander et al. (2022): "Some of them are afraid of the language": Perceptions of TVET college staff about the relationship between English language proficiency and academic performance among Engineering students

9 FACTORS THAT INFLUENCE LANGUAGE PROFICIENCY

Despite a certain sequence of acquisition steps, language acquisition is generally an individual process (cf. Jeuk 2015: 56ff). On the one hand, this is due to the respective individual cognitive prerequisites, but perhaps even more to social factors (ibid.: 38). Whether age has an influence can only be proven to a limited extent. It is considered certain that intelligence, which can be measured via a IQ, has no influence. Collier (1987) listed different factors influencing the development of a second, foreign language such as English or Spanish which are comparable to problems associated with the acquisition of academic language

High-level cognitive, affective and social (language) skills do not generally develop in a spontaneous way. They develop in a systematic and guided way through extensive interaction with learning materials and teachers. As Hernandez points out, cognitive and meta-cognitive skills are acquired 'through social interaction (with lecturers) where comprehensible communication occurs a awareness of these comp ension problems and problem-s ing st gies is demonstrat (bv ners) (Hernandez 1993) 6).' The ° ap-

FACTORS AT INF ∠NCE PR⊙FICIEN

Vent's as a series diversion new country, total on the of residence in the country, grade of the vin a new school, acquisition of the treading and writing skills, formal educational background, family's educational and socioeconomic figround, and

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students' former exposure to the new country's lifestyle.

pline offective of social skins. A development of all these skills is clearly (at ast compender on language. The role of language (and verbal interaction) is probably on more subjects through the medium of a non-native language can be more challenging and intensive than conventional language lesLearners are exposed to a broader range of language while simultaneously gaining knowledge and skills in different areas of the curriculum. Empirical research in second language acquisition has shown that languages are learned through usage; cognitive and constructivist psychologists have made it clear that language learning takes place when learners are involved in the content they are dealing with. Considering the development of academic language, it is argued, that if learners develop academic competency in their mother tongue, so that language is a to for thinking, then this can be transferred to any additional language (Cummins 2000; Ball 2010).

s a

Basic controllable influences on the acquisition process provided by sch

- Particularly high effects of input quality and quantity on lange development;
- creating an appreciative learning environment;
- providing experience on learnabile of education l lar age;
- promoting language awareness as a rout throut onguage relation (cf. Fürstenau & Lange 2013: 206).

Chapter 5

MODELS & CONCEPTS FOR CONTENT AND LANGUAGE INTEGRATED LEARNING

1 INTRODUCTION

The promotion of the linguistic and communicative comp ncies stude .e. The d at vocational schools cannot be achieved by language teach bove 2 opment of vocational literacy also means that the s nts lè language with which they will be confronted i studies heir n aents must ls. Last but not least, understand operating instructions and the wri g of prol advising customers requires high technical langu e which n nly L2 students are able to cope with to a limited ex. achers must have knowledge Tonce, al and understanding of the language support. for (vocational) education settings.

One possibility, for exam port of students in language-sensitive , is the or language-responsive s sons, v ch makes it possible to increase iect subject-specific l mance. I terature different forms of implemenang i vocational) education and training are tation of inte l language Often umbrella terms

- Conten ed Langua integrated Learning (CLIL),
- Shelt Instruction Observation Protocol (SIOP),

ent-Based Instruction or

nguage sensitive subject teaching

are use refer to all such approaches, which, however, differ depending on target group and language support.

2

CONTENT AND LANGUAGE INTEGRATED LEARNING (CLIL)

Marsh & Frigols (2008): Intro-duction: Content and Language Integrated Learning



Wolf (2012): Content and Language Integrated Learning (CLIL) The term Content and Language Integrated Learning (CLIL) is a term used especially in Europe for forms of bilingual education where an additional language, in most cases English, is used as the language of instruction in non-language scl subjects. Content and language integrated learning is an approach or method which integrates the teaching of content from the curriculum within. teachin of a non-native language. CLIL has been 'often seen as an umbrella teri. aspects of bilingual education, cross-curricular teaching, content-based chin and ESP (Darn 2009: 275).' The current definition of the term wa the rided authors of the European Framework for CLIL Teacher Education, pub. 010 (cf. Marsh et al. 2010). It has enhanced and rendered re pre other earn definitions: CLIL is a dual-focused educational app ich in y .h ar additional language is used for the learning and turching of c ten+ d langi e, with the objective of promoting both content and la vage n y to preined levels (Marsh et al. 2010: 2). The additional larguage d learning which takes place, is not taught as such but r rred to never it seems useful.

Learners reach proficiency levels in all for skills of Learning, speaking, reading and writing far beyond what spected in ther English programmes for young learners.

v schools subsets that Content and Language In-Research conducte tegrated Learnin LIL) ha ositive effects. It indicates that CLIL contributes to improved Englis students, without any detrimental impact on rofig .cy am their prof r first lar age (L1) or their subject knowledge. Moreover, hCV. CLIL b en found learners to be more cognitively active during process. e lear

MAIN AIMS OF CLIL

- to focus on content vocabulary
- to develop communication skills
- to develop cognitive skills
- to raise awareness of citizenship



Figure 14 Definitions of Content and Language Integrated Learning (CLIL)

4 Cs of CLIL

CLIL is often described as consisting of four components, known as the 4 Cs: Content, communication, cognition, and culture (Coyle 2007; Coyle et al. 2010). This framework provides a helpful way to define teaching objectives and learning outcomes in CLIL settings. The inclusion of content, communication, cognition, and culture highlights the interconnection of these elements. Additionally, the for h C, culture, is sometimes referred to as citizenship or community. Overall, the 4 in CLIL are closely linked and mutually reinforcing aspects of the approach.

Knowledge of the 4Cs is useful for :

- planning lessons
- ensuring learners' communicating during the lesson, e.g. When as participate in pair work or group work tasks?
- encouraging teachers to think of the cognitive contained and the left on
- encouraging teachers to think of cultural links a second curric sum, e.g. maths: symmetry – finding examples of metry sture (second art)

There is no specific methodology that has tes to be a However, according to Pavesi et al. (2001) some common features at a used in dragent countries, and 'CLIL requires active methods, comparive class nom management, and emphasis on all types of communication (lingu. size, and kinaesthetic)':

- In CLIL, it is imposed to a subset of a new language.
- Pavesi et al. (2) et anasise to importance of using holistic ways of learning as well as learning rom practical, hands-on experiences.
 - Pave al. (2001) also suggest the use of the targeted language (TL) for auhentic munication without paying attention to language mistakes.
 - he teaching an second language and content at the same time should include Language scaffording such as reformulation, simplification and exemplification.

Code switching should normally be the last option for communication purposes

What is scaffolding? Read more on page 118.

Coyle (2005) suggests the 3As tool for CLIL lesson planning. Whilst there is clearly some overlap between the tools, their suggested use is significantly different. The 3As tool operates in 3 stages. The 3As are used with specific content.

- Stage 1: Analyse content for the language of learning
- Stage 2: Add to content language for learning
- Stage 3: Apply to content language through learning



3 CONTENT-BASED INSTRUCTION (CBI)

Content-based instruction is another form of bilingual education, developed in North-American contexts in the mid-to-late 1980s (e.g. Brinton et al. 2003, 1989; Genesee 1987; Tedick & Cammarata 2012). Content-Based Instruction (CBI) is an educational approach that focuses on teaching subject matter content while si multaneously developing language skills. It is a language teaching methodolog where the content of a particular subject area becomes the vehicle for language learning and acquisition. In CBI, the subject matter takes centre stage guage learning occurs naturally as students engage with the content. The orn goal is to provide students with meaningful and authentic lar re input d opportunities to practice language skills in real-world contexts. In sed nt Instruction (CBI), it is common to see language teache ng instru English while collaborating with content teachers t o-teach ourse. Alternatively, a content teacher may design a lored for teach a co se spe cally English as a Second Language (ESL) learners

On the other hand, Content and Language In a sted housing (L) often involves content teachers delivering constitution through a second or foreign language, similar to CBI.

However, Content and Langroun Integrate earning goes beyond this by incorporating content from various subject to lactuage classes as well. In other words, the curriculum in CLU consistence in the curriculum class excluses and goals.



4 SHELTERED INSTRUCTION OBSERVATION PROTOCOL (SIOP)

SIOP is a concept for integrated subject and language learning developed in the US. It is a comprehensive and detailed model for instructional planning, design and evaluation in all subjects. The goal is to teach subject content in a task- and learning goal-oriented manner while developing subject-specific language skills. SIOP-based instruction is aimed in particular at students for whom the langu of instruction is not the first but a second language. Students receive support the subject lessons to develop general and subject-specific (academic) longuage skills. The basis of instruction is the Sheltered Instruction Observation. col. consisting of eight components with a total of 30 sub-items. It is intended to able teachers to plan their lessons appropriately in terms of nethod, stent a stance, the taking into account the subject and language learning obje ves. Fo cafcomponent 4 Strategies includes the following catures: Le hing rategie folding Techniques, and High-Order Questions & T



Source: Created by author, based on Echevarria et al. 2004: 209-210

5 LANGUAGE-SENSITIVE TEACHING AND LEARNING

The term language-sensitive teaching and learning is based on a set of different scientific concepts derived from second language acquisition research, cognitive psychology and constructivism, and stand for a principle of instructional design for linguistically heterogeneous learning groups. The term refers to var ious approaches to provide better access for learners to subject-specifi ntent (Gibbons 2002; Zahner et al. 2012). Therefore, language-sensitive subject is about transferring the learners' social language skills into the subject's cific language skills. This includes not only the discourse funct. he su ct terminology, but also formal features of abstraction and complexity s sive constructions, impersonal formulations and cor tic senten ex hyp structures. In language-sensitive subject teaching, is not a med that these linguistic competencies will be developed on their n. <u>O</u> ne one nd, language-sensitive subject teaching is a didac requir rt whose i lementation benefits all learners. On the other hand it is with social or ous th academic language support needs ben way if their competencies in in a sp this regard are actively developed.

Planning language contine on communication in particular with respect to subject content.

Chapter 6

IMPLICATIONS FOR PRACTICE -METHODS & STRATEGIES

1 INTRODUCTION

Teaching and learning strategies are a critical factor in facily cessful ing th acquisition of an additional language and have been the su ct of m rescarch (Griffiths 2013). In multilingual classrooms leaver deal wi om x conte in another language. For that reason, vocabulary-bui ry impor vg play t role in classroom methodology. Another important netho ogical promotion of effective reading strategies which le order to work with iers ne content subject materials. Moreover, a language pportive roach integrates a variation of (linguistic) concepts, strangies and a vities (Tenderg 2006: 188), e.g. simplification, multimodality, code swith teaching and editing. New orpl skills can only develop if stude ke an activ their individual learning process. Accordingly, a ny ative procedures have been established er of cu for revising texts for lan lge and Intep: that encourage and enable learners to engage in an exchange 00' le aesth c and communicative impact of their own or others' te

WHAT STUDENTS HELPS LEARN SCIENCE IN ENGLISH

A group of 14–15-year-old Spanish learners were asked what helps them learn science in English (Bentley & Phillips 2007). Here are a few responses:

- 'More vocabulary and more diagrams on the worksheets'
- 'Give us more explanations'
- 'Use easy words for the explanations and vocabulary'
- 'Work with games'
- 'The complicated words in English with the Spanish words next to the English
- 'Put the hard vocabulary in a side of the page in Spanish. Put more
- 'Add a list of vocabulary and illustrations' y 'Maybe put the most dimwords with translation'

The following strategies could be derived from discussions with straints in Germany (Many languages - one school 2016: 2

- 'Creating a positive fear-free learning clin
- 'Teachers are role models. They shou' spea
- 'Tasks are visualised and supplement with syntax and graphics, which increases text comprehension.'

/ and

- 'Cooperative forms of work slow down to reaching proceed and provide space to be able to work thoroughly sistic as we as content challenges.'
- 'Numerous communicative situa. I a low students to apply what they have learned.'
- 'Correcting aguistic encouncil be done by repeating the correct wording or by,
 for examine correctly ampleting a sentence. Likewise, repetition can be used to
 model the interview to ask sentific questions.'
- adage a suld be proved: Materials and resources such as verb tables, dicnaries, etc.
 - dents should take responsibility for their own learning by creating a glossary of ords.

What STEM Teachers Need to Do

Here are some general suggestions for making sure that your teaching supports your students learning:

- activate prior knowledge
- support students' vocabulary-building skills,
- model how STEM vocabulary should be used,
- encourage student language production through increasing interaction op tunities
- use different grouping strategies for distinct purposes
- use cognitive discourse functions as transmitters and builders of content knowledge
- enable learners to use of cognitive discourd functions
- help your students develop learning strategies
- add visuals (e.g. draw pictures of some word) on b pard, b cal diagram to show the text structure)
- simplify the text

Below find suggestions for starter active. The teaching activities and for plenaries.

BEFORE CON ESSON

ver p

R, plan jointly with EMA staff.

- for opportunities for learners to talk with and listen to their peers or the teacher elp develop the inderstanding of the key scientific ideas .
- epare questions so that there is a balance of open and closed questions.
- Plan which learners will be targeted with particular questions.
- Provide physical models and other learning aids to support learners' visualisation of the key scientific ideas.
- Identify the science vocabulary related to the unit of work that is being planned. Id visuals (e.g., insert a visual diagram to show the text structure).
- Review previously used vocabulary and new vocabulary in relevant contexts.
- Provide clear explanations of the meaning of scientific vocabulary but do not simplify the science. For example, provide a glossary to paste into books at the start of a unit of work. List the words in alphabetical order.
- Narrow down the scope of task.

Recommendations from Recent Research Syntheses on Instruction in Academic Language at the Secondary Level in Schleppegrell & O'Hallaron (2011: 6)

DURING STARTER ACTIVITIES

- Sit learners learning EAL with a 'buddy' so that they can receive support from a partner if required.
- Ask learners to discuss something with a partner; encourage them to practise responses in pairs, using home or first languages where appropriate. Allow learners time to rehearse any feedback to another learners or an adult assistant.

ral time

- Encourage learners learning EAL to join in the range of starters provided, responding to questions or providing feedback from their group.
- Build in time for learners learning EAL to think before responding,
- Be explicit about using scientific vocabulary and ensure that learn scientific language exemplified by the teacher.
- Explain the meanings of new words carefully and rehe courage their use in context during discussion sessio
- Using some L1 (code switching)
- Use quick word games to reinforce key vocabulary
- Add visuals (e.g., draw pictures of some work on the

DURING PLENAP

- Summaris y facts an
- Highlight entificy Jular
 - Ar visual g. v pictures some words on the board)
- erentiat stioning.
 - courage lean. AL to present their work to the class and to talk about conclusions and the learning strategies they have used.
- Encycle other learners to ask learners learning EAL questions and provide time for the correspond.
- Ensure leaver's learning EAL are provided with the necessary information and resources to complete their homework.
- Use opportunities to revise and consolidate new or key vocabulary.
- Use 'sentence starters' to encourage learners to summarise what they have learned and record it.
- Provide scaffolds to help learners learning EAL express what they have learned during the lesson and how they learned it.

DURING MAIN TEACHING ACTIVITIES

- Organise the class to provide time with learners learning EAL to probe their understanding and monitor their progress.
- Check that learners learning EAL understand safety procedures before starting any practical activity.
- When assigned to the lesson, ensure the EMA teacher or teaching assistant effectively supports learning EAL.
- Ensure learners learning EAL have the opportunity to work collaboratively in a range of groups and paired contexts:
 - with a learners who shares the same first language when that is possible;
 - with learners who are good role models for science as well as provide good language models

s who

- Encourage discussion and cooperation between learners.
- Build in time for learners learning EAL to concludate their up of science vocal lary.
- Set explicit listening tasks.
- Read instructions slowly, aloud twice.
- Explain instructions
- Using some L1 (code switching)
- Provide matching, grid or DARTs with succompleted parts as a model. Ensure these are used for reading and a cative structure, not written tasks.
- Encourage learners to use during language diction to list their own definitions.
- Provide instructions a corror in ways that compare visual presentation and short text.
- Support learners learning EA and ecord and summary of what they have learned using scaffold write as, talk frame word lists etc. appropriate to the nature of the task woid independent workshow tasks that limit talk or enquiry work.

2 ACTIVITIES

Activities in the classroom serve various purposes, all aimed at enhancing learning, engagement, and the overall educational experience for students. Tasks and challenges appropriate to the subjects can develop learners' cognitive skills. Moreover, activities designed for language integrated subject teaching and learning support students in developing their listening, reading, speaking & writing ski and subject-specific knowledge acquisition. Many activities types are similar to those in each curriculum area, but may focus more on:

- Listening, reading, speaking & writing
- Dealing with vocabulary

Furthermore, learners can be supported by:

- consolidation and revision,
- using supplementary resources, and
- project work.

Some activities, such as matching, carry is out surviviand web searches, are used in most CLIL subjects by some active is are used more often in some subjects than in others.

Directed activities a ed and purper all tasks or exercises designed outcomes. These activities are typically guided to achieve specifi ojective by a clear set of i ructi pr objectives, and they are used in various goa education ational settings to facilitate learning, skill de-, and rec rof ving, or tertainment. Directed activities are organised velopmei problem. and in ed to text (or DARTs) developed by Gardner and Lunzer (1984) are vities 1 re that students engage with text in a way that promotes underg ways to ding.

where are two main parts to DARTS: Reconstruction and Analysis. Both approaches involve active learning, make learners think and take decisions and and engage students as they appear much like puzzles and card games.

Here are practical strategies that teachers can use to develop reading.

The guidance was developed by the Department of Education and Skills (DfES, 2004).



EXAMPLES OF ACTIVITIES

Depending on the content goal (see learning activity taxonomies) are many activities which are effective for developing knowledge of subject-specific content, e.g.:

2010),

- classifying words, numbers or objects into groups
- dictation: whole class, group and pair
- feature identification
- gap fill
- labelling
- matching
- multiple choice
- ordering letters, words, sentences and paragraphs
- poster presentations
- questionnaires
- summarising
- true/false; yes/no
- word, sentence, diagram, text completion
- reading and listening

A variety of CLIL-type activities for example can be and in Ber



Table 11 Directed activities related to text (DARTs): Summary

Reconstruction activities **use modified text**.

Student tasks: Completion-type activities or recording. with deleted or segmented text.

1 Text completion Students predict deleted words (cloze), sentences or phrases. Student tasks: Text marking and labelling

Analysis activities use straight text.

1 Underlining or highlighting Students search for specific targ or phrases that relate to one aspe content, e.g., key words

2 Diagram completion Students predict deleted labels on diagrams using text and other diagrams as sources. 2 Labelling Students labor segme, and text which deal with rerent as s, e.g. labelling a scientific coupt on labor rovided by the teal random prediction, lence, c sion.

3 Table completion Students complete deleted parts of a table using table categories and text as so reference. **3 Segmenting** Segmenting paragraphs or text nits. pelling of segments of text.

4 Diagrammatic representation

maps, labelled models.

Constructing diagrams from text, e.g.,

using flow diagrams, concepts maps, mind

4 Completion a vities with ordered text (a) Predicting a lical ver for a seque. (bit is a signifying segner complete

cal

5 Predictio

s given by the reasoner.

Students prediments part(s) of text with segments presented in sequence.

5 Tabular representation

Students construct and represent information in tabular form, extracting it from a written text.

Source: Created by author, adapted from Davies & Green (1984)

3 ADVANCED ORGANISER

Advanced organiser is a metacognitive strategy proposed by American psychologist Ausubel in 1960 in his book Assimilation Theory of Meaningful Learning. Generally, advanced organiser can be a tool used to introduce the lesson topic and illustrate the relationship between what the students are about to learn and the information they have already learned. Ausubel (1960) proposed that, 'organisers are introduced in advance of learning itself, and are also presented at a higher level of abstraction, generality, and inclusiveness; and since the substantive cont of a given organiser or series of organisers is selected on the basis of its suitabil for explaining, integrating, and interrelating the material they precedent bis strat egy simultaneously satisfies the substantive as well as the programming cr. for enhancing the organization strength of cognitive structur

Generally, an advanced organiser is a strategy of text composition. At the beginning of a text, an overview of the following content is given. This would may ate to read on and facilitate comprehension in that the sader of the set himsen mentally and activates his previous knowledge in this.

At the beginning of a lesson, learners receive a e overview of the mprehe intended learning objectives and the approach t hieving To enhance the psychological impact of this instruction Lapproal it is recommended to activetati ly engage learners in a dialogue-driven in. of the learning materials, which may include texts, grav earning maps. However, presentation it is important to note the ne emp evidence regarding the impact of this ∕t de€ approach on learning ou itively established. Various contextual mes i hflu results. the context of specialised instruction factors are likely t risk gro it is adv Je to maintain a dual focus: one on the aimed at linguist anticipated su related leas fied above. s exer

4 ADAPTING TEXT AND MATERIAL

There are many ways of selecting and adapting materials that help learners understand subject content at text, sentence and word levels.

With any materials, teachers need to ask: Is the content suitable? Is the language suitable?

At text level we can include visuals, diagrams, animation (moving images on a screen) and visual organisers. We can make sure the page layout (design page) is clear. At sentence level we can include definitions and short exploration At word level we can use labels or highlight key content vocable why und lining, using capital letters or using bold font. We can also add word a glossaries of key content words.

nultiplicity The teaching and learning of an additional langua s drav on r of multimodal resources. With new technologies, t of comr hication in 10 school has widen, giving rise to new practi These be digit? mediated texts, such as apps, or part of new text nakin, ologging, coding, actices, and gaming.

Table 12How materials can be adapted

Texts can be adapted by:

recording language in a rubric or in a text

Example

Adapatation

Describe how the population is distributed with reference to the areas on the world map opposite

Look at the world map opposite. Describe how the population is distributed in the areas on the map.

paraphrasing language

Example

Explain why the south-east is more prone to flooding

removing unnecessary details

Example

When experimenting with media, get into the spirit of it and don't be afraid to try new ideas.

cessi

Jut

reducing length of sentene

Example

The advantage of word that you can m ang retyping th le docume you can easily ke a m

Adapatation

Explain why the south-e flood.

Adapatation

When e

afraid to

imentin h media, don't. be

ι to

ew ideas

Adapatation

dvantage of word processing is that Т can make changes. You don't have to retype the whole document. If you make a mistake, you can easily correct it.

Source ated by author

cori

ted from Bentley 2010: 53-54

5 CODE SWITCHING

Code switching is the alternating of languages, dialects or of language styles in the speech of an individual, or the use of more than one language in the same conversation (Adler 2001; Setati 1998). Halai & Karuku (2013) believe that code switching should be recognised by education authorities as a valuable resource that can be adopted in multilingual mathematics classrooms to facilitate learning. They think that code switching could be crucial in improving the quality of classroom discussions and interactions, just as it was discovered by the America teachers in Tanzania (Kasmer & Billings 2017). Chikiwa & Schafer (2016) 1Ch that to promote code switching that is precise, consistent, tra rent, ai upportive of teaching, consensual understanding of best practices for hing sw must exist. Code switching promotes participation in the res experience in South Africa, when lecturers use only Iglish w teaching, the students become passive, and few partipate. Whe ectur use students' language together with English, more students par

Maluleke (2019), concluded that code switch elps t aluate whether students understand the content bein, helps them to put emphasis ught a on the concepts that are critical. Mixing ng between English and intercha the students' language helps to maintain flow of in Armation and improve the Jege students' understanding. Accor (2011), code switching serves as a communication strategy that bridges linguistic competence in two languages. Code swite academic performance and encourages students e enn to make meaning contri lons in class.

DEALING WITH VOCABULARY 6

In the field of science, learner encounters a wealth of specialized vocabulary, frequently including words that have everyday meaning as well as a scientific meaning. Science vocabulary can be categorized in various ways and these intricacies pose challenges in science instruction. Conceptual words (e.g. work, energy) often have different abstract meanings in science than in everyday language (Harmon et al. 2005; Wellington and Osborne 2001). Some terms are visible and more concrete, while others rely on abstract imagery (e.g. electron).

s. (1957): Reading ence Instruction: IV. Students' Misspelling n Words

Grave (201 tishing Voca ulary to English Language earners (ch. 1 & 2)

Many scientific terms have word roots that help to understand the science behil them (Example: New metals end in -ium). However, misspellings can p. sues, as they make it less straightforward to identify the word roots that can students valuable insights into the scientific concepts behing Crooks 1957; DfES 2002: 119).

For that reason, vocabulary-building plays a very important ole classro methodology. Learners must get teacher support i erstand c der to epts underlying specific academic terms. Multiling l lean shou mple, be equipped with defining vocabulary in the targe understand the words nguage important for their content learning. They shou earn how se dictionaries effectively.

Vocabulary in ases tha e used within disciplines including: 1. words

heanings that differ from meanings used in hrases wit t-sn e.g. table);

c vocabulary used across disciplines (e.g. compare, analyze, evaluaieral a

ect-specific v efined for use in the discipline.

everv

3.

nd

ience is full of technical terms that need to be used correctly. Some of the science terms have different meanings when used in everyday speech. For example, the word rce and unit have several different meanings in English. This could lead to confusion some cases, learners may not know the meanings in everyday use so are less likely confused by them.

In the last decades there has been an increasing interest in vocabulary learning strategies given that they are found to facilitate second/foreign language vocabulary learning and recall (Ahmed 1989; Stoffer 1995; Gu & Johnson 1996; Schmitt 1997). A range of strategies have been explored since the mid-1970s. Explicit vocabulary instruction – not in isolation, but within meaningful and relevant content area instruction – has a positive effect on reading and content area learning (Gottlieb et al. 2009; Nagy & Townsend 2012). Other key aspects and trends in resea related to vocabulary learning strategies are:

Metacognitive Awareness: Recent research has emphasised the importance of metacognitive awareness in vocabulary learning. Learners who are awareness in vocabulary learning. Learners who are awareness of the own learning processes and actively monitor and evaluate the company company sition strategies tend to be more successful in expanding their learness.

Mnemonic Devices: Mnemonic devices, such as mer by allos, and alization to a niques, and association methods, continue to be a subject of the estimation. Studies examine how these devices can help be mers remer be a subject of the structure of the second seco

Technology-Enhanced Learning: The stegral of tech. Anto language learning has led to innovative vocabula stearning bis and applications. Research in this area explores the effective stars of mobile ops, language learning softwares, and online resource in facilitation vocabulary acquisition.

Cultural and Sociolinguistic Factors. It ry acquisition is also influenced by cultural and socioling as the port. Research as explore how learners from different cultural back pounds are bach vocabulary learning and how cultural factors can affect vocabulary use and reintion.

Individuoffere.Research is investigate individual differences in vocabulary.ulary.ing, includ.e of motivation, age, cognitive abilities, and priorguagewledge in vocabulary acquisition.

L -**Term R** tion: Understanding how vocabulary is retained over the long to a is essential. Searchers study the factors that contribute to vocabulary rention and the strategies learners can use to prevent forgetting.

STUDIES	CATEGORIES USED IN THE VOCABULARY LEARNING STRATEGY CLASSIFICATION		
Ahmed (1989)	 Information sources Dictionary use Memorization Practice Preferred source of information Note-taking 		
Stoffer (1995)	 Strategies involvine language use Asategies involving creatine activite Asategies used a self notivation Stratenes used a nearemental linkage. As mory states Vanil/auditon a stegies Stratenes used to overcome anxiety Stratenes used to organise words 		
Gu & Johnson (1996)	 Metacognitive regulation Guessing strategies Dictionary use strategies Note-taking strategies Memory strategies for rehearsal Memory strategies for coding Activation strategies 		
JChmitt (1997)	 Discovery strategies Determination Social Consolidation strategies Social Memory Cognitive Metacognitive 		
Source: Created by author			

Table 13 Studies and categories used in the vocabulary learning strategy classification

Schmitt's (1997) created Taxonomy of Vocabulary Learning Strategies based on Oxford's (1990) Strategy Inventory for Language Learning (SILL). In Schmitt's (1997) theory, discovery strategies comprised of two main sub-strategies, namely determination and social strategies, while consolidation strategies have four sub-strategies, namely social, memory, cognitive, and metacognitive strategies. It is helpful to find different ways (multimodal ways) to introduce new vocabulary to your students. Using a short video to introduce new vocabulary, or a gapped te where students can choose words to fill the gaps, is very effective. Another way introduce new vocabulary is by using classroom posters. These can show tegorised mind maps, labelled diagrams or pictures, or a short topic-related van

Learning from word lists, using mnemonic methods (such as the over word ethod), repetition, and guessing form context are also observed in term. The efficacy of strategies. Activities in a classroom such as the original games help students learn target language effectively (Bythway 2015



Here is a handout which provides some examples of strategies to tackle word-level work in science. The guidance was developed by the Department of Education and Skills (DfES, 2002).



		Social Strategies	Study and practice meaning in a group Teacher checks student"s flash card or word lists for accuracy Interact with native speakers	
		Memory Strategies	Study word with a pictorial representation of its meaning Image word [®] s meaning	
	Consolidation Strategies	Memu Strategic	Connect word to a provinal experience Associate the word atom its continuates Connect the word to synchous and antonyms Use semantic uses Use semantic uses Use semantic uses Use semantic uses Deg Macod Cori Mecod Group work together to cudy them or work together spatially on a page Use any work together spatially on a page Use any work together within a storyline Study the spelling of a word dudy the spelling of a word dudy the sound of a word finderline initial letter of the word configuration Use Keyword Method Affix and root (remembering) Paraphrase the word"s meaning Use cognates in study Learn the words of an idiom together Use physical action when learning a word Use semantic feature grids	
		Cognitive Strategies & Metacognitive Strategies	Use English-language media (songs, movies, newscasts, etc.) Testing oneself with word tests Use spaced word practice Skip or pass new word Continue to study word over time	

Source: Created by author, based on Schmitt (1997)

6.1 KEY WORDS & BUILDING A SCIENTIFIC GLOSSARY



Wellington & Osborne (2001): A taxonomy of the words of science in Language and literacy in science education, ch. 2

Keywords play a crucial role in various aspects of language, communication, information retrieval, and search engine optimization. Keywords are specific words or phrases that encapsulate the main ideas, topics, or themes within a piece of text, a conversation, or a search query. They serve as essential markers for underst ing and categorizing content. We can identify words as 'key' if they help learne to communicate ideas in science clearly and with understanding. As a teacher, you will need to judge what is needed for your students depending on rior attainment and experiences. Often teachers provide students with lists ry), sometimes placing them on the wall. A glossary provides `⊳f defin n of tify key terms and concepts as they are used in a specific subject. When key words, a useful way of doing this is to identify the hat desci objects, processes and concepts to do with a topic. nking a^þ c words in these three categories helps to reduce the lot th of the l d with the Wor ssoc equipment used (e.g. Bunsen burner) should not ov w other ms. Instead, focus on selecting words that assist your st vibing ? explaining nts in their observations and ideas (DfES 20 21).

It is a good idea for students to build the glossary exientific terms as they learn about new science topics. Examples key words on be highlighted in bold on their worksheets. You can be classe build up definitions terms and ensure time for learners to add each term. I glossary. Doing this electronically, e.g. in Word, make classe build up definition at any stage.

As well as this, no e two as of to 12 cards using two different-coloured cards: Put the works on a support and to definitions on cards of the other colour. Periodically, and out supplicards to mall groups and ask them to match each word with herminition.



Introducing & Practising using key words

Often teachers provide students with lists, sometimes placing them on the wall, but often these remain there permanently, without practising. Scientific words that are important have to be introduced carefully and then used regularly (DfES 2002: 23).

Introducing

- Introduce the word.
- Write it on the board.
- Say the word.
- Ask learners to say the word out loud.
- Break the word down into syllables.
- Ask learners to read the word.
- Ask learners to use the word in a description

Practising

There are many ways in which tudents' up of scientific terminology can be developed throughout a topic (DfEs 24):

ation

or ex

- During oral work a case vist on correct pronunciation and increase the opportunities for judents and words aloud.
- Lesson starter out ocus on e key words for the topic, for example using a loop me or a d activity atching words to definitions, or even a quick 10 ion test.
 - Rather putting a key word list for the topic on the wall, select out the key ords that the used during the lesson.

A homework activity could focus on word-level work, using activities such as word webs and word completion exercises.

Vocabulary Instruction produced by AMNH



6.2 USE OF COGNITIVE DISCOURSE FUNCTIONS AS TRANSMITTERS AND BUILDERS OF CONTENT KNOWLEDGE

Since learners build and structure knowledge through CDFs ($\xrightarrow{\frown}$ Discourse Functions), cognitive discourse functions should be used in teaching and learning processes. The CDFs should be realised in form of a teacher-student interaction, whereas students should be the dominant performer CDFs.

In table 15 are some example tasks & realisations of CDFs.



Source: Created by author, adapted from Mehisto et al., 2008: 156

Every subject exhibits a distinctive textual genre, complete with clearly defined models and established practices. These encompass written documents, spoken presentations, images, graphics, and more. Throughout the learning journey, students are encouraged to engage their cognitive discourse functions by participating in a variety of activities, categorised as doing, organizing, explaining, and arguing. These activities necessitate the utilization of precise operational verba as illustrated in the 'pluriliteracies wheel' shown in Fig. 18.

These verbs trigger CDFs and can be used to design both written and oral tasks.



Here is a toolkit for developing academic language and use of academic disourse functions.



The toolkit was developed by Sweetwater District-Wide Academic Support Teams (2010).

6.3 GRAPHIC ORGANISER

Graphic organisers are a valuable tool for scaffolding understanding. Teachers will already be familiar with using representations of information such as timelines and mind maps. Graphic organisers are particularly useful in developing organisational and thinking skills, and in allowing transfer and collection of information and ideas with little reliance on the written or spoken word.

The teaching of a second language and content at the same time should includ language scaffolding such as reformulation, simplification and exemplification



ondidorio (2010): The efulness of Graphic Org

ers in Enhancing Science

Module I.1 Diversity and Inclusion in TVET Library

6.4 LISTENING & READING

Reading as well as writing are lifelong skills for academic learning and success in school. TVET students often dedicate a significant amount of time to reading materials during theoretical classes. Through listening and reading, students get new information. It is very important that the students are actively involved, meaning that the students must work for the information rather than trying to take it i passively. Unfortunately, many of these students face difficulties in comprehend ing the passages they read, leading to low performance scores. The rend comprehension of texts is not a passive process of extracting meaning L er seen as an active mental work of the recipients and as a tex rder int ction ing (cf. Artelt et al. 2007: 11). This process can be supported and improv nding strategies. Reading strategies play a vital role in er tudents comprehension abilities and equipping them with ctive re ng skills. Brown (2001), points out that 'reading compression is a atter .evel ng appropriate, efficient comprehension strategies (ibid p. 306) ag strate s are defined as 'mental tools' for planning, controlling, of text ormation (cf. roces Rosebrock & Nix 2011: 59).


Pearson & Paris (2008) define reading strategies as the 'deliberate, goal-directed attempts to control and modify the reader's efforts to decode text, understand words, and construct meaning out of text' (Pearson & Paris 2008: 15). Previous research has demonstrated that instructing second language (L2) students in reading strategies can effectively enhance their performance on comprehension and recall tests (Davis 2010; Wright & Brown 2006). Studies have also shown that proficient readers engage actively with the text and possess a conscious awareness of the strategies they employ to comprehend what they read.

The classification of reading strategies can be conceptualised in terms of the sification of language learning strategies by Oxford (1990):

- Cognitive and metacognitive reading strategies used to manipulate and guage that include note-taking, summarising, paraphrasing the sting, analysing and using context clues.
- Memory reading strategies, which are techniques used assist lear to recall information, such as word association and seman or ping.
- Compensation reading strategies, such as 'inference', and include reading, which can assist the learner in making up to adding denciencies.
- Affective reading strategies, which include seconcourage behaviour to lower anxiety, such as rewarding onesely reading ciciently.
- Social reading strategies, involving collaboration of the peers, for example, to ask questions, seek help of an and to get a dback while reading (Magogwe 2012; Singhal 201).

to bette etention of textual information, Repetitive reading but above all to t the inf lation in the working memory, so retenti that-laboratio ossible for ... period of time (Steiner 2006: 102). reading strategies aim at organizing and structuring or realle rgani on of the text. Moreover, the reduction of the text to the structuri he infor. essential landl & Frie h 2006: 4).



Whereas, metacognition, refers to the awareness and understanding of one's cognitive processes ('thinking about thinking'), metacognition in reading often includes metacognitive awareness and metacognitive regulation (Mokhari & Reichard 2002; Paris & Winograd 1990; van Kraayenoord 2010). Metacognitive strategies are used by the person before, during, and after reading to make the reader aware of their own reading process. Metacognitive awareness about reading facilitates students to monitor and control their reading processes, thus allowing them to organise reading processes. Metacognitive Reading Strategies are divided into three categories, these categories include:

- global reading strategies,
- problem solving reading strategies, and
- support reading strategies.

Whereas high proficient readers tend to use global rategie ow proficient readers resort to local strategies only. Furthermore, hig provident readers s use more strategies and more self-monitoring strategies than proficient caders

The difficulties bilinguals encounter i ts in the cond language may eading differ from those experienced by mono ruals (K t et al. 1985). Whereas the strategy cited most often by English mon nguals wa oncentrating', 'Noting rategies of bilinguals was 'Student's Details' and 'Self-Generated ons', the Perception of Teacher's Expectations results of this study indicate that monolingual Englis¹ vere using as the as many strategies as ESL students. One por ion of the difference in the number of strategies sle expl mentioned by th Js is t ESL students may have been transferred vo gr too quick' Eng ading an onsequently not have the opportunity to det Tw Aly, the primary concern of second language velop t e strategic he development of decoding skills, and not those cognitive strategies tuden reading comprehension. However, teachers can assist students in h enha ading comprehension by teaching them various reading stratencing the ei

Table 16Global reading strategies used by adult students whose first or second language is
English

I have a purpose in mind when I read.

I think about what I know to help me understand what I read

I take an overall view of the text to see what it is about before reading it.

I think about whether the content of the text fits my reading purpose.

I review the text first by noting its characteristics like length and organization

When reading, I decide what to read closely and what to ignore.

I use tables, figures, and pictures in text to increasing understand

I use context clues to help me better understand what

use typographical features like bold face and italia identify

I critically analyze and evaluate the in ation prese

I check my understanding where a cross new more on.

I try to guess what the content of the ext is yout when I read.

I check to see / guesse

ut the text right or wrong.

ng.

formation.

eadin

d in the text

or, adapted from Mokhtari & Sheorey 2002

Table 17Problem solving reading strategies used by adult students whose first or second
language is English

I read slowly and carefully to make sure I understand what I am reading.

I try to get back on track when I lose concentration.

I adjust my reading speed according to what I am reading.

When text becomes difficult, I pay closer attention to what I am reading.

I stop from time to time and think about what I am reading.

I try to picture or visualise information to help remember what I read.

When text becomes difficult, I re-read it to increase my derstand

When I read, I guess the meaning of unknown words or

Source: Created by author, adapted from N

es dif

When text be

 Table 18
 Support reading stream used by accesstudents whose first or second language is English

ntari &

I take notes while the me understand what I read.

c, I read pud to help me understand what I read.

ey 200

I und the or circ instrumentation the text to help me remember it.

I use how materials (e.g., a dictionary) to help me understand what I read.

paraphrase te ideas in my own words) to better understand what I read.

I go back and forth in the text to find relationships among ideas in it.

I ask myself questions I like to have answered in the text

When reading, I translate from English into my native language.

When reading, I think about information in both English and my mother tongue.

Source: Created by author, adapted from Mokhtari & Sheorey 2002

Steps a teacher can take to scaffold understanding of a written text:

- Highlight the important content words which you would like your students to know, and decide how you are going to help your students learn it
- Underline 'difficult' vocabulary and grammar structures. Replace these with simpler words and grammar
- Notice the length of the sentences. Where possible, replace one long sentence with two or three shorter ones.
- Split the text into short sections, each with a side heading
- Put the text into bullet points
- Find or create illustrations, diagrams or maps to help students understand
- Choose a graphic organiser to enable students to extract *i* rmather from the text more easily

What is scaffolding? Read more on page 118.

During science lessons, a substantial por f tim typically allocated to listening to the teacher. Howe his assumption wed when it comes to English as an Additional I learners, as it wrongly assumes they can Juage L easily grasp lengthy inst anatons, and summaries presented by the tions, teacher, which ofter invo th se of sc tific terminology and conventions. For EAL learners •monstra that employing active listening techmas be niques can en. ecially when teachers are introducing and comprehe. For instance, during a plenary session, EAL learners can ng les. be encou d to use rnative connectors or conjunctions in response to the teacher's s example: tements. He

The bulb lights up because energy is transferred from the cells".

ers might say:

A

"If energy is provided from the cells the bulbs will light up"

(DfES 2002: 18)

Table 19Scaffolding listening and reading

	EXAMPLES FROM THE CURRICULUM (HERE: ENGINEERING)
 SCAFFOLDING LISTENING AND READING Prepare the context of the texts and the factual knowledge of the topic. Encourage learners to predict what they might hear or read. Pre-teach or elicit new content vocabulary. Ask learners to underline key language at word and sentence level Discuss with learners the reasons why certain language is used. Use visual organisers so learners can make notes as they listen or read. Provide a wide range of Jian ing and reading texts. 	<section-header><text><text><list-item><list-item><list-item><list-item></list-item></list-item></list-item></list-item></text></text></section-header>

6.5 MULTIMODALITY

Students develop familiarity with new words and concepts through repeated multimodal (aural, textual, verbal, and visual) exposure. Rapid and repeated practice is needed to achieve the required number of exposure noted above (Peregoy & Boyle 2013). Recent research suggests that in

The term multimodality refers to the combination of multiple sensory and communicative modes, such as sight, sound, print, images, video, music, and so on, that produce meaning in any given message.

today's rapidly evolving and diverse era, contemporary learners derive meani by integrating multiple modes of communication, such as written and oral language, gesture, visual elements, sound, and movement. This is facilit by the abundance of semiotic and digital resources that are prevalent in their dam odal, (Jewitt & Kress 2003). According to this perspective, knowledge al. (2001) co-constructed, and performed or represented (Miller 2007 ه). Kress have analysed the role played by language an ultimodal ols in ence rning. These findings on various language and cognitive proc e partici ŀly relevant for language sensitive subject teachers. A roach ʻimoda he classroom can result in the creation of attract arces and and p ssiona can provide linguistic support.

For the student, a multimodal approach can be a verful mot, ator. It can add variety and interaction to a lesson and <u>le stin</u> ating visuals to support the understanding of language. It can also be a rich of cultural awareness. Most of all, it can allow students collaboratively and independently. It is work odal vays) to introduce new vocabulary to helpful to find different √s (mul* your students. Using a sl vi co intr ice new vocabulary, or a gapped text, where students d ds to fill t gaps, is very effective. Another way to noos introduce nev bulary is sroom posters, mind maps, labelled diaa short topic-related text. icture

6.6 PEER EDITING



dality in the New Content Standards Era: Implications for English Learners

Peer editing, also known as peer review, is a collaborative process in which individuals, typically students, colleagues, or peers with similar expertise, review and provide constructive feedback on each other's written work, projects, or creative endeavors. This process is commonly used in academic, professional, and creat settings to improve the quality and effectiveness of written documents, resear papers, essays, articles, manuscripts, and more. Several meta-analyses have explored the effectiveness of peer review in learning contexts. More rec rtair authors have undertaken comparisons between the beneficial outcomes. de ing peer reviews and receiving them. The positive influence of vering iews d ti is attributed to the extended time learners dedicate to a given subreflective process it initiates when reviewing the work In term advantages of peer reviewing for learners, research a benefits such s have no as the opportunity for comparing different approa es and anda of work, as well as the exchange of information and ideas. Con among t potential drawbacks of peer reviews on the learning llenge making accuess, th rate assessments has been highlighted

Peer editing offers a range of advantage r divers cational purposes. These include fostering student engrgement in writing process (Miao et al. 2006), enhancing comprehension of ... udien (Rollinson 2005), promoting a heightened awareness of learning con-(Ferris & Hedgcock 2005; Hsieh 2016), and improvi skills and Inguistic proficiency of L2 students ILE WI (Lam 2013; Min 2 5). Note research on peer editing has demonstrated its efficacy for both L1 L2/ dish le ers.

With the vent of 'nologice' avancements, the integration of peer editing within online Instr Delivery Format (IDF) has become increasingly ially in the context of a flipped classroom model. Studies have conible, i the positive impact of peer reviews of students' homework on ntly reve sì earning experiences of both reviewers and reviewees. Technologies such as crosoft Word (Liu & Sadler 2003), synchronous chatting (Chang 2012), and virtual classroom discussion boards (Guardado & Shi 2007) have demonstrated their effectiveness in facilitating learning within this framework.

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6.7 PEER TEACHING

Peer teaching is simply defined as a form of instruction where learners teach each other, i.e., students take on the role of the teacher and must first develop topics and problem contexts for themselves before they create learning processes for their fellow students. Peer teaching is known to improve teamwork abilities and social skills among learners and to contribute to the learners' comprehension. Like peer review, peer teaching has been shown to be beneficial both for learners acting as 'teacher' and learners acting as 'student' what is explained by the ac engagement required by both roles. This usually leads to greater cognitive depth processing and thus greater sustainability of the learning results.

A difficulty of peer teaching is the choice of suitable peer learning groups or F. This difficulty can be overcome by letting instructors decide the F. gs or by relying on measures of previous achievements to form inhy togeneous groups.



6.8 SCAFFOLDING





The term scaffolding is highly relevant for the support of learners and their attempts to acquire academic language competences in all of the subject areas. It refers to a variety of instructional techniques used to move students progressively toward stronger understanding and, ultimately, greater linguistic and textual. dependence in the learning process.

In the context of second language acquisition, the metaphor of scaffold or, amony others by Gibbons (2002), is used to refer to a support system in (language tive) subject teaching.

Scaffolding means that teachers provide successive levels of tem_F. v (lai age) support that help students reach higher levels of compr on and s sition than they achieve without assistance by teach or mor lowledgeab peers. Like physical scaffolding, supportive strateg men 'lly removed are ip when they are no longer needed, and the teacher g ແລ¹ ⊿hifts m e responsibility over the learning process to the stud ese inclv a language Most component, whether it be using their *p* ther stions so that vue, as students can show their understanding the textbook or using a dicrading tionary. Building on ideas presented in L evarria, V and Short (2004), Fortune (2004) categorised scaffoldir hniques three types and identified examples of each:

- Verbal scaffoldy come that are focused on language development
- Procedural sc oblding and activity structures

Instrutional scale ling to that support learning

SCAFFOLDING FEATURES

Scaffolding content and language includes features such as:

- allowing longer wait time(s)
- breaking down tasks into small steps
- creating interest in the subject
- doing practical demonstrations
- giving constructive feedback
- providing word banks, glossaries, sentence support and language frames for input and output of content and language
- providing models of effective work
- relating subject topics to personal experience
- allowing some use of the L1 (code switching)

Table 20Scaffolding techniques in CBI classrooms

VERBAL SCAFFOLDING	PROCEDURAL SCAFFOLDING		
 Paraphrasing Using 'think-alouds' Reinforcing contextual definitions Developing questions with Bloom'staxonomy in mind Writing prompts Follow oral text with written text Elaboration and expansion of student esponses Use of cognates Purposefully using synonyms and antonyms Effective use of wait time Teaching familiar chunks 'May I go to the restroom? "Excuse na etc. Clear enunemon and articulation? Language task for graphic organiser Building circumlocution skills 	 Using an instructional framework that includes explicit teaching (T)-modeling (T)-practicing (St)-applying (St) 1-1 teaching, coaching, modeling Pairing and grouping of students so that less experienced/k usledg eable students work with more experienced/k payledg eable students Activating prior knowledge Think are lease Met's Expand. Met's Expand. Met's Expand. Met's Expand. Using and we group techniques Joint writing project Use of routines TPR/TPRS Gibbons' Activity Cycle (oral-informal, writtenformal) Lyster's register variation activity Scored discussion Role play, simulations Process writing SQP2RS 	 Posting schedules Labeled visuals Pictographs as a success supporting strategy for dictogloss with young leapers Graphic organisation (Second) Manipublives User visuals user visuals user visuals test variety of resonance (Second) test variety of resonance, (Second) test variety of vari	

Source: Created by author, based on Echevarria, Vogt & Short, 2004: 86-87

6.9 SPEAKING & WRITING

On average learners spend about a third of their time writing in science. It is therefore important to make sure that what learners are asked to write helps them progress in science.

Writing



Reynolds et al. (2011): Writing-to-Learn in Under-gradu ate Science Education: A Community-Based, Conceptually Driven Approach Writing-to-Learn (WTL) is a versatile pedagogy that instructors use to reget a range of instructional goals, including development of conceptual knoccritical thinking (Gillespie et al. 2014).

Writing will support learning in science when:

- the purpose is clear;
- the writing helps learners to organise their thi
- learners are challenged to think and make decis. Jut their iting;

ng;

- learners are asked to write for a variety of vposes
- the writing is well chosen and support the poor of the lesson;
- learners are clear about the character cs of the bound expected.

For writing to support the learning wide relearning EAL it is important that (DfES 2002: 15):

- The writing sports the ojective of the lesson.
- The pure sed be a king is car. L2 students need to know why writing is important in here a them le a science.

stud ware clear about the characteristics of the writing expected. students eed to wught how to structure a conclusion and how to frame an argument hen considering ideas and evidence. Sharing good examples of these with the lass or group varifies what is expected of learners.

students are provided with opportunities to write for different audiences and purposes; writing up experiments and answering questions can often be demotivating for learners.

A arners could use a mind map to organise the thinking of before writing. The three important words are what, how and why.

Table 21 Types of writing in STEM and possible purposes

TYPES OF WRITING IN SCIENCE	POSSIBLE PURPOSES
Answers to questions	To check understanding.
Plan for an enquiry	 To learn how to make decisions about how to collect evidence that is valid and reliable To learn how to set out a procedure To assess planning skills.
Record of observations or measurements	 To learn how to assemble evidence in such a way that it captor accepted a saily To comess recording stills
Conclusion to an experiment	 To learn house analysis defines, construct arguments and reasing skills To assummer the state
Evaluation of an enquiry	 learn husto evaluate procedures location of measurements
Note taking	 Is an aid for revision and Fo help synthesise ideas To organise thinking To clarify ideas in order to write more precisely sometime later
Express	 To help learners make links between ideas and apply their understanding To probe understanding and reveal misconceptions To help learners explain their thinking, ensuring they can distinguish between the how explanations (describing how something works or how something happens) and the why explanations (giving scientific reasons why something happens)

Library

Table 21 (continued)Different registers of language

	POSSIBLE PURPOSES
Argument	 To analyse and present conflicting views To develop the skills of considering evidence To engage learners To allow learners to demonstrate achievement To carry se creative thought
Writing up enquiries	 To show how scientist. To assess learners' application the kascientific idea
Recording information	 To assess derstance To summer the sy points
Source: Created by author adapted from	D 2002:

Talk in science

el

Verbal communication in the realm of ducation holds significant importance. It offers ble opportunities to articulate, elucidate, and mers substantiate thei damental scientific concepts while employing prerasp of cise scientific ter nol . Resea shows that learners spend about a third of their tim cience les hs but very little of their time in discussion with ther or wr cher.

re are not voccasions, such as discussions, when talk can help to raise learnttainme. In science.

Table 22Scaffolding speaking and writing

SCAFFOLDING SPEAKING AND WRITING		
 Talk about what is going to be said or written. Provide listening or reading models before speaking and writing. Help learners notice the language they need to use at word and sentence levels. Use visual organisers to brainstorm ideas learners might use. Encourage collaborative work so leaners can provide scaffolding for each other Help learners think about who they are speaking or writing to, and why they are speaking or writing to. 	 (Learners are working with Professional English in Use - ICT by Estera & Fabré, 2007) Tell learners about how we can define and classify parts of a machine. Show learners a text about to the term or organization Ask learners to proferine physics for a best of the devel: relevent on the physics of a section of the devel of the devel	

6.10 STUDENT'S LEARNING STRATEGIES

Learning strategies are the methods and approaches that learners employ to acquire new subject content. Effective learners possess an awareness of their learning process and actively consider which strategies to employ for different tasks. Proficient learners utilise a broad range of learning strategies that learners can use before, during and after doing tasks.

For instance, common vocabulary learning strategies include technique such as memorization and drawing images. Sometimes learners visibly demonent where strategies, such as underlining key vocabulary, while at other times, strategies a not observable, such as making associations between their more strategies and the language of instruction. Metacognition (thinking about learning) and important learning strategy and can be divided into for part

- preparing and planning for learning
- selecting and using strategies
- monitoring learning
- integrating strategies
- evaluating learning.

EXAMPLES OF STRATEGIES USED BEFORE DOING A TASK

- Selecting and setting learning goals
- Deciding on criteria to measure how well a task can be done
- Analysing the task, its purpose and what must be done
- Working out timing of stages

EXAMPLES OF STRATEGIES USED DURING TASKS

- Identifying key content vocabulary
- Predicting meanings of content vocabulary a redicting tex
- Guessing meanings of new words
- Asking for clarification
- Paraphrasing
- Drafting work
- Risk taking and experimenting with new conceptor d language
- Using some L1 for a specific purpose, e.g., checking concept, loo, e.g. up a bilingual dictionary,

ntenț

- checking meaning of vocabulary with a peer
- Note taking
- Organising work
- Personalising learn

LES OF STRACES USED AFTER DOING TASKS

- Deciding how to remember new words and concepts
- Making visual prompts to aid memory
- Reviewing work alone or in small groups
 - Exchanging work with a partner and asking for feedback
 - Somparing work with previous work and deciding how it has improved
 - aiting work

EX.

Summarising work

Table 23Learning strategies and teaching instructions

	LEARNING STRATEGIES	TEACHING INSTRUCTIONS	
		The teacher tells the students to	
	organizing learning	divide their maths notebooks into separate sections for different to be	
	using visual prompts to aid memory	write the key words in their geogra, notebook and illustrate	
	seeking clarification	ask for held menever and have not underston how to pair of dation graphs.	•
	setting learning goals	where is to the construction of term.	
	risk-taking	press their ideas about protecting the comment even when they are not f all the English words.	
	facilitating autory lear 5	read their Keep Healthy advertisement aloud to themselves at home	
	Soun a seated by author, and an KT: Conter CHING AN WLEDGE TEST. 2010.: 13	nt and Language Integrated Learning - TEA-	

6.11 TRANSLANGUAGING

Translanguaging activities use both L1 and L2. The working language is the learners' L1, to be later replaced by L2. In a typical translanguaging activity students get a text in L1, with questions in the CLIL language (L2). They are supposed to answer in L2 as well. That way the students can process the content and learn subject specific vocabulary in L1, usually needed for later exams, and by reading and answering the questions in L2, they are exposed to L2 subject specific vocabulary. Language support is given by a list of formulaic language, functional phrases subject specific vocabulary. After a translanguaging activity the students should be able to answer questions on the subject in L2 in free speech and the super L2 subject specific vocabulary.

For García, this common practice of bi- or multilingual child codeswitching but goes beyond it as a more effective means of She lse maki defines it as 'the act performed by bilinguals ccessing of erer nguist tures or various modes of what are described as autonomou uages in ler to maximise communicative potential (2009: 140). In th hool d en as a strategy for learning and could be systemative to for sense-making. y resol

Jones (2017) distinguishes between a) 'teacher diverted translow uaging' and b) 'student directed translanguaging'. A ording to the students can either decide on their own linguistic means of different ordination inguages for communication, or they are actively encouncies to do so by the order of the students.

Schastak et al. (2017) show earners' Aingness to communicate in educational contexts is primarily det the l ners' abilities in their learners' skills nine in the family lang e prompt g or motivation provided by Teachordi o Jones (2017), can be distinguished at ers. Multilingv l teraction. level. her learners use them for more everyday personal every day for secondary discourse (basic interpersonal translanersona hange guaging) ge about cognitively demanding content of the subject or the exc ruction (cogning e academic translanguaging). matter i

Chapter 7

TECHNOLOGY-ENHANCED CONTENT & LANGUAGE INTEGRATED LEARNING

1 INTRODUCTION

This chapter discusses the benefits of mbining c tent a lang e integrated learning and technology-enhanced learning and aces som bols and hnology scenarios for teaching and learning at TVE. hanced Lanlleges guage Learning – also referred to cometer as d language carning (CALL) - is not a method of teaching, but a mea of utilis. technology for language learning. New tools and resources have a lly with the advent of vared, esp tion an the Internet and emerging I. ommunications Technologies (ICTs), which efficiently support and assist h many of the challenges due to linguistic heteroger gital transformation holds potential for the individualization of t learning ocess and thus especially for language-sensitive teaching approa

Ative inter lation of digital impact on language use and Findings aleď ocial colla. ceraction, and motivation. However, a lack of eviskills und regarding the correlation between using digital technologies and nce wa nt knowledge in CLIL. Digital technologies have the advantage ncing o more closely to the students' lifeworld and offering learners nnecting e ariety of perspectives when researching and receiving (e.g. websites, online newspapers, texts, blogs, podcasts, YouTube videos, etc.) and allowing them to use these as speaking and writing prompts.

For the (conceptually oral) introduction of a lesson, digital tools are suitable that ially activate the students' prior knowledge of content or language and enable them to access a topic intuitively. Short surveys or queries (e.g. with a voting or brainstorming tool such as Mentimeter) are conceivable for this purpose, in order to obtain an opinion or to record prior knowledge. Digital mind maps (e.g. with MindMup, Coggle), digital pin boards (such as Padlet), or whiteboards are suitable for collecting ideas or brainstorming, on which students can record initial ideas or associations – also collaboratively – and link them to one another.



Vo et al. (2022): The impact of digital technology on content and language integrated learn-ing in higher education: a systematic review of literature Short quizzes (e.g. with Kahoot) are also possible to get started with a topic. Digital games are worth examining as language learning contexts. For instance, playing the Sims game learners encountered and learned a diverse range of vocabulary (Miller & Hegelheimer 2006). Numerous scholars contend that – in particular – massively multiplayer online role-playing games (MMORPGs) offer fertile learning environments replete with valuable educational prospects (Delwiche 2006; Squire 2008).

Technology has had a significant impact on vocabulary learning in recent years. It has revolutionised how people acquire, practice, and retain new words and ph es in various languages. Here are some ways in which technology has influenced vocabulary learning:

- Online Language Learning Platforms: There is a wide array of the language learning platforms and apps (e.g. Duolingo, Babbel, Roset stone). Offer interactive vocabulary lessons. These platforms often using gamific stoner d multimedia elements to make learning eng. Sing and fu
- Language Learning Apps: Mobile apps have made broken bearning ore accessible than ever before. Language learness can performed to the second second
- **Digital Flashcards:** Traditional flashcards have een digitista, allowing learners to create, review, and share digner bearders. Platforms like Anki and Quizlet enable users to customise flashcarders bearders, and audio.
- Language Learning W ates: Nu cous websites offer vocabulary-building exercises, including v d lists ceracine quizzes, and language forums for practice and discussio
- Language La ing Soft. Language learning softwares, such as lanspech ftware and integrated language tools like Grammarly, help users and ou cabulary while also improving grammar and writing skills.
- **Langu Exchange S:** Apps like Tandem and HelloTalk connect language learned with native speakers for language exchange. This allows for real-world reduce and vocabulary expansion in authentic conversations.
 - **nguage Learning Podcasts:** Podcasts offer audio content for vocabulary ing. Many podcasts provide transcripts and explanations to help learners und and acquire new words and phrases in context.
- **Language Learning Videos:** Video-sharing platforms like YouTube host a plethora of language learning channels. These videos often include lessons, vocabulary drills, and cultural insights.
- **Text-to-Speech and Speech Recognition:** Some applications use text-to-speech and speech recognition technology to help learners practice pronunciation and understand spoken language.



van Dijk et al. (2022): Desigr principles for language sensitive technology lessons in teacher education

- Virtual Reality (VR) and Augmented Reality (AR): Emerging technologies like VR and AR offer immersive language learning experiences. Learners can explore virtual environments where they interact with objects labelled in the target language, enhancing vocabulary acquisition.
- **Language Learning Games:** Educational games and simulations designed for language learning immerse learners in virtual worlds where they acquire v cabulary through play.
- **AI-Powered Language Learning:** Artificial intelligence (AI) is being the begrated into language learning platforms to provide personalised recommendation track progress, and adapt lessons to individual needs.

Tools developed for, in particular CLIL, are introduced in more deta. be vital course book.

NOTES



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