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# Digital learning competencies as goals to address language teachers' challenges using tablets and Microsoft Teams

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Secondary school language teachers who participated in this study taught using tablets and MS Teams, which has its own associated challenges. In the study reported on here we explored ways in which the 13 digital learning competencies in the South African education context support teachers in addressing their teaching-related challenges. The challenges and digital teaching practices of 4 secondary school teachers were explored using a collaborative action research design. The phenomenon was explored and described as a case study. Data collection instruments included focus-group interviews, classroom observations, and documents from teachers' lessons. We employed a conceptual framework with digital didactical design as context for levels of technology integration and digital learning competencies as the conceptual framework. Seven interviews, 24 observation sheets, as well as lesson documents were analysed, using content analysis and coding. The results point to teachers effectively addressing digital teaching challenges by aiming to improve their digital competencies and levels of technology integration.

**Keywords:** collaborative action research; digital learning competencies; language teaching; Microsoft Teams; tablets; technology integration

## Introduction

The workforce of the future requires skills to implement ubiquitous in-hand information and communication technologies (ICTs) such as tablets, alongside office solutions such as Microsoft (MS) Teams (Microsoft Education Team, 2023; Yalman & Basaran, 2021). Such a workforce would be creators of knowledge rather than content consumers (Haleem, Javaid, Qadri & Suman, 2022). The coronavirus disease (COVID-19) pandemic accelerated the need for effective ICT use across all spheres of life (Haleem et al., 2022; Lindfors, Pettersson & Olofsson, 2021). Owing to this reality, teachers are expected to effectively integrate ICTs in their teaching to allow for personalised learning with increased learning engagement (Aithal & Aithal, 2023). This necessitates technical skill and relevant training.

In the *White Paper on e-Education in South Africa* (Department of Education [DoE], Republic of South Africa [RSA], 2004), educational ICT implementation is defined as teachers' ICT proficiencies. These proficiencies range from entry-level computer literacy to innovative ICT use (DoE, RSA, 2004). The basic level is labelled entry, with increasing ICT integration into teaching and learning labelled as adoption and adaptation. Focused and innovative ICT integration is labelled appropriation and finally, innovation.

The 2007 *Guidelines for Teacher Training and Professional Development in ICT* envisions all South African teachers at the adoption level of the framework (DoE, 2007). Yet, Ndlovu and Lawrence (2012) found that most teachers were still at the entry and adoption levels.

The reality of these low ICT implementation levels points to a need for teachers' digital learning competence. Thirteen digital learning competencies stipulated in the *Professional Development Framework for Digital Learning* (Department of Basic Education [DBE], RSA, 2017) are summarised in Figure 1.

| | |
|---|---|
| **A. PROFESSIONAL GROWTH AND KNOWLEDGE** | |
| 1 | Adopt the habit of an enquiring mind regarding the educational value of using digital tools and resources |
| 2 | Be reflective about challenging current digital learning and teaching practices |
| 3 | Understand the role of the teacher, the learner and the digital resources during digital teaching |
| 4 | Participate in local and global professional learning communities |
| 5 | Select appropriate digital tools and resources when fulfilling the roles of the educator |
| **B. CURRICULUM FOCUS** | |
| 6 | Integrate digital tools and resources to enhance learning objectives in various learning environments |
| 7 | Develop learners' global awareness and understanding using digital communication and collaboration tools |
| 8 | Transform learning through the innovative use of digital tools and resources |
| 9 | Enhance class management, assessment and feedback processes through the use of digital resources |
| 10 | Integrate learners' skills development in terms of digital literacies with curriculum-based learning |
| **C. LEADERSHIP** | |
| 11 | Demonstrate commitment to the vision for digital learning in the province, district and school |
| 12 | Accept responsibility for planning and implementing digital learning at the school |
| 13 | Initiate peer support and collaborative, work-place learning |

**Figure 1** Summary of digital learning competencies for South African teachers (DBE, RSA, 2017:15–19)

These competencies illustrate how South African teachers require ICT usage skills in three key areas, including professional growth, curriculum presentation, as well as leadership roles (including five, five and three competencies respectively).

The four secondary school teachers who participated in this study (two Afrikaans and two English) were equipped with the relevant ICTs. However, they still experienced several challenges with tablet integration including technical difficulties, determining the relevance of ICTs for language teaching, and the skill sets of both teachers and learners. Teachers require support in addressing these challenges as they attempt to improve their digital competencies and their associated levels of ICT integration.

The participants involved in this collaborative action research (CAR) study considered their levels of ICT integration, while addressing their challenges of teaching language with tablets and MS Teams. They aimed to improve their ICT usage and practices by setting goals related to the 13 South African digital learning competencies.

The primary research question was: How can digital learning competencies as teaching goals support secondary school language teachers using tablets and MS Teams? The secondary research question was: How does teachers' addressing of their challenges of teaching with tablets and MS Teams influence their levels of technology integration?

With this study we aimed to explore how the 13 digital learning competencies in the South African educational context as study goals were employed to assist teachers in addressing their digital teaching challenges. This specifically related to the use of tablets and MS Teams. In this way, the framework's ideals were practically institutionalised in the classrooms of secondary school language teachers.

## Literature Review

### *Teacher challenges related to teaching with tablets*

Figure 2 presents some of the challenges associated with teaching and learning using tablets.

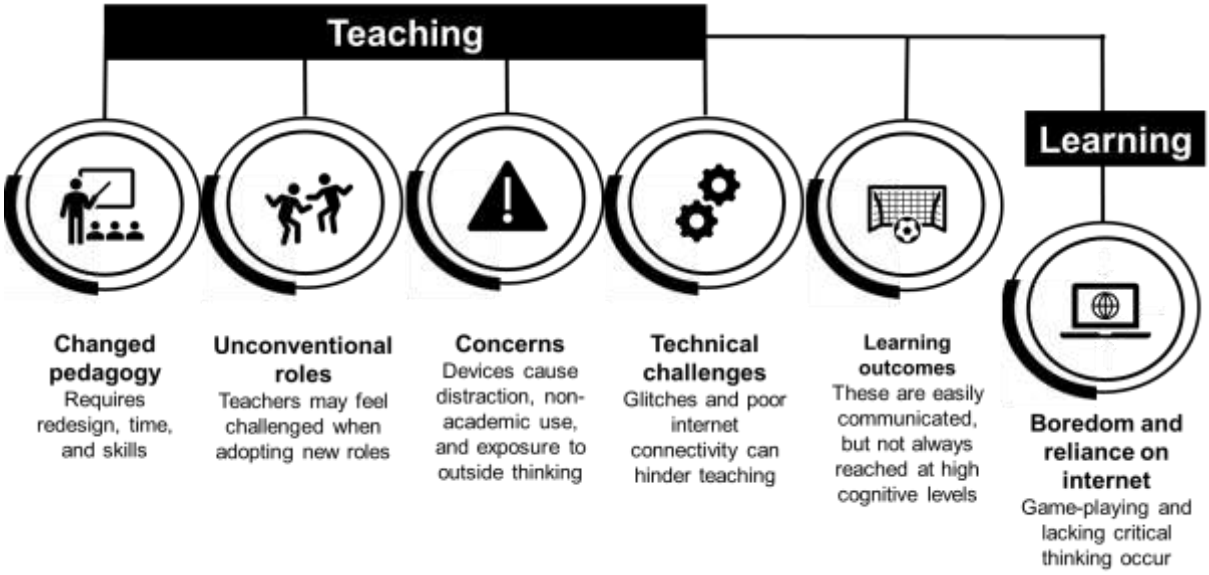


**Figure 2** Challenges associated with teaching and learning using tablets

These challenges affect one learning and five teaching domains, depicted in Figure 2. Tablets introduce different challenges as digital teaching is not always easier than traditional teaching (Jahnke, Svendsen, Johansen & Zander, 2014). Teachers' pedagogy needs changing, requiring many hours spent on lesson planning (ChanLin, 2017) for extensive course redesign (Montrieux, Vanderlinde, Schellens & De Marez, 2015). Not all teachers are willing to change their pedagogy while using tablets. In a study by Jahnke et al. (2014), only 50% of Danish teachers transformed their approach to learning activity design using tablets (Jahnke et al., 2014).

Teachers are also challenged to assume unconventional roles but feel reluctant to forfeit control of their classrooms (Montrieux et al., 2015). These roles include instructional designers, trainers, team players, coordinators, advisors, monitors (Groff & Mouza, 2008), the student role (Bowman, 2004), and facilitators (Kalogiannakis, 2010).

Teachers are concerned that devices used in class may cause distraction (Montrieux et al., 2015) or decrease learner attention (Kim & Kim, 2017). Learners may also display a poor ability to distinguish between the recreational and academic use of tablets (Jahnke et al., 2014). Yet, through academic appropriation of tablets, this distinction becomes clearer (Jahnke et al., 2014; Kopciewicz & Bougsiaa, 2018).

Teachers encounter technical challenges such as glitches that require teacher improvisation or even digital tool omittance, causing frustration (Raney, 2018). While technically skilled teachers persist, this demotivates the less-skilled (Jahnke et al., 2014). Poor internet connection and related network expenses (Jahnke et al., 2014) were technically-related challenges experienced by teachers.

While teachers potentially face several challenges related to their pedagogical design and management using tablets, it is their levels of ICT proficiency and associated digital competence that greatly determine the extent of their integration of tablets as teaching and learning tools.

### *Frameworks for levels of technology integration*

South African teachers' competencies are hierarchically arranged in the *Integrated Teacher Development Framework*. The framework briefly describes teachers' levels of ICT competence (Sandholtz, Ringstaff & Dwyer, 1997) and integration. Both teacher graduates and in-service teachers require such competencies, with in-service teachers expected to reach the adoption level through training (DoE, 2007).

Scandinavian countries require teacher digital competencies that are much more comprehensive than the South African *Integrated Teacher Development Framework*, but use only four of the five levels of technology integration proposed by Sandholtz et al. (1997). The technology integration matrix (TIM) (Florida Center for Instructional Technology, 2020) and the substitution augmentation modification redefinition (SAMR) model (Puentedura, 2006) use some of the same terms for the hierarchical classifications of other frameworks already discussed. A comparison of the terms used to express levels of technology integration used across frameworks is included in Table 1.

**Table 1** Levels of technology integration across several frameworks (DoE, 2007; Florida Center for Instructional Technology, 2020; Krumsvik, 2011; Puentedura, 2006)

| | Levels of technology integration (Sandholtz et al., 1997) | TIM Five levels of technology integration (Florida Center for Instructional Technology, 2020) | Teachers' digital competency model (Krumsvik, 2011) | Integrated teacher development framework (DoE, 2007) | SAMR model (Puentedura, 2006) |
|---|---|---|---|---|---|
| Level 1 | Entry | Entry | - | Entry | - |
| Level 2 | Adoption | Adoption | Adoption | Adoption | Substitution |
| Level 3 | Adaptation | Adaptation | Adaptation | Adaptation | Augmentation |
| Level 4 | Appropriation | Infusion | Appropriation | Appropriation | Modification |
| Level 5 | Invention | Transformation | Innovation | Innovation | Redefinition |

The ICT level descriptors from across the frameworks were used for conglomerate definitions (see Table 2). These are used to classify teachers' levels of ICT integration through which research activities can support efforts to develop teachers' digital competencies and their translation into increased levels of digital tool integration.

**Table 2** Five levels of ICT integration (DoE, 2007; Florida Center for Instructional Technology, 2020; Krumsvik, 2011; Puentedura, 2006; Sandholtz et al., 1997)

| Level | Descriptive name | Conglomerate definition |
|---|---|---|
| 1 | Entry | Teachers use ICTs to an extremely limited extent to deliver content, while still teaching in traditional ways. |
| 2 | Adoption | Teachers use ICTs to perform traditional tasks. They can assist learners with ICT use and do some basic technical troubleshooting. |
| 3 | Adaptation | Teachers and learners use ICTs productively to create materials for teaching, learning, and administrative purposes. |
| 4 | Appropriation | Technology is used in new ways, and more frequently used by learners who have some form of choice. |
| 5 | Invention | Technology is used for new purposes, and lessons can in no way be done without these technologies. Learners are also highly involved and independent. |

## Conceptual Framework

The theoretical lens for this study was a combination of the 13 digital learning competencies (DBE, RSA, 2017) and the levels of technology integration defined by the DoE (2007). Secondary school language teachers employed the digital learning competencies as teaching goals to address the challenges experienced in teaching with tablets and MS Teams. As they addressed the challenges, their levels of technology integration developed and changed.

Figure 3 illustrates the conceptual framework. The digital teaching layers of digital learning competencies (left) as introduced in Figure 1, as well as levels of technology integration (right) as introduced in Table 2, are situated within the context of digital didactical design.

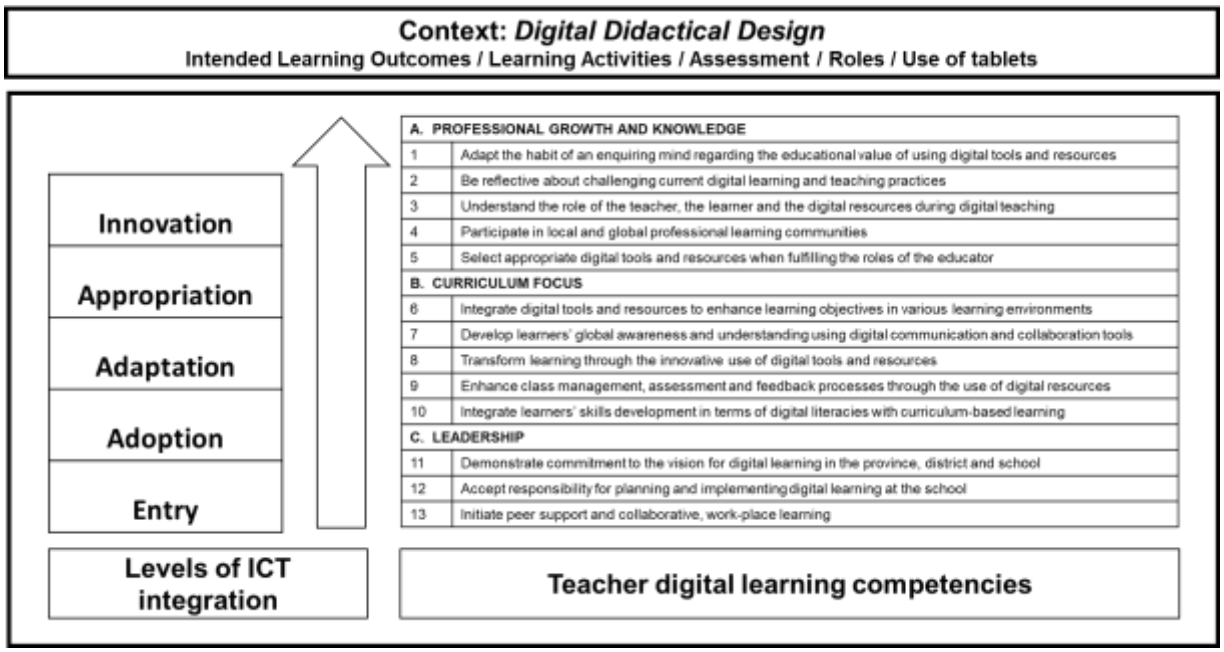


**Figure 3** The conceptual framework (DBE, RSA, 2017; DoE, 2007; Jahnke, Bergström, Mårell-Olsson, Häll & Kumar, 2017)

The digital didactical design (DDD) context is founded on the work of authors Jahnke et al. (2017). They label lesson designs for tablet classrooms as DDD. DDD includes five constructs, namely learning activities, pedagogy involving an interplay of teaching goals, activities for learners, types of assessment, and the roles of teachers and learners. This is done while engaging in teaching and learning using tablets with internet access (Jahnke et al., 2017).

## Methodology

### Research Design

We adopted a phenomenological philosophical stance to study language teachers' lesson designs. The ontological stance in the study was informed by interpretivism, since individual interpretations of subjective experiences were considered as the truth. Knowledge was gained by means of socio-constructivism, where qualitative, textual data illuminated participants' experiences. Qualitative data provided a way for understanding the participants' lived experiences under study.

The study's CAR design was situated within a case study design. Such action research succeeds in involving research participants in all phases of the research. Figure 4 indicates the two CAR cycles that were followed during this study.

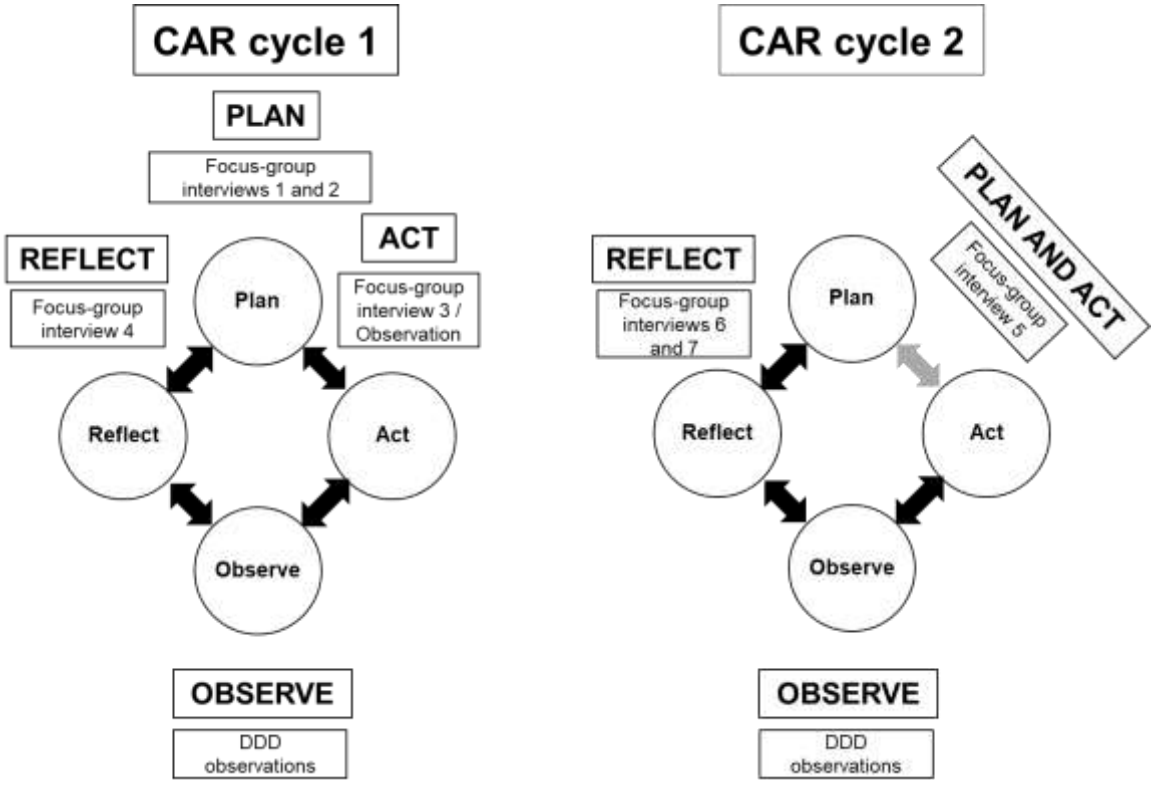


**Figure 4** Collaborative action research (CAR) cycles

Each of the CAR cycles indicated in Figure 4 include the phases of plan-act-observe-reflect. Through interactions among the participants and the researchers, sharing, verification, and extension of participant experiences and insights occurred. This was done during seven focus-group interviews and two formal lesson observations. While we formed a central part of the research process, we included the inputs of all participants, often checking that participants' intended meanings were captured across the data sources and analyses.

The phenomenon of language teachers' designs for using tablets in class was studied as an exploratory and descriptive case study with rich contextual understanding. The case was studied over a period of 6 months during 2020 to allow for sufficient teacher orientation, participant-researcher interaction, and lesson planning, observation, and reflection.

### Participants

The study population, sample frame and sample are illustrated in Figure 5.

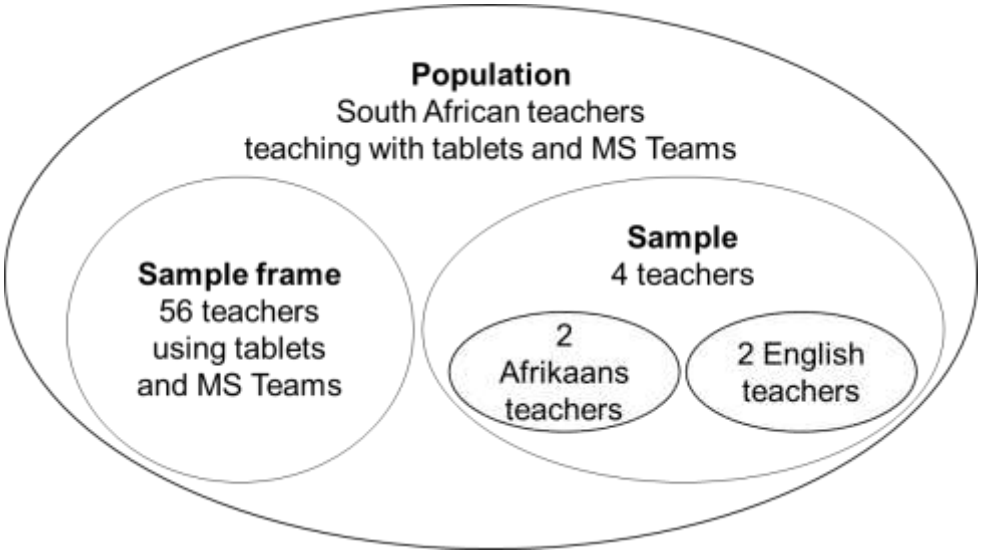


**Figure 5** The study's population, sample frame and sample

The study population consisted of South African teachers who taught using tablets and MS Teams. The sample frame initially consisted of 56 teachers at the target school who were all expected to teach with tablets and MS Teams. One secondary school language teacher approached other language teacher colleagues to participate in the study. A purposive sample of four language teachers, two Afrikaans and two English, was selected. These teachers willingly participated in the study and were conveniently sampled. While the academic work of secondary school learners was included anonymously in this study, learners were neither involved in interviews, nor the focus of the data collection, analysis and findings. Table 3 indicates the pseudonyms and other demographic information of the study participants.

**Table 3** Participant demographics

| Participant (Pseudonym) | Gender | Age | Subject | Years of teaching experience |
|---|---|---|---|---|
| David | Male | 25–30 | English | 6–10 |
| Roy | Male | 40–45 | English | 1–5 |
| Lily | Female | 25–30 | Afrikaans | 6–10 |
| Alexis | Female | 25–30 | Afrikaans | 1–5 |

### Data Collection

The four participants each had to plan two language lessons, one per CAR cycle. Planning was done by the teacher presenting and the other participants and the researcher provided feedback and input. These lessons were then presented by the respective teachers. During each lesson presentation the other participating language teachers and we observed the lesson using the DDD observation sheet (the Afrikaans teachers observed each other's lessons). The participating teachers used the theoretically-grounded research instrument as guide in the planning of their teaching, as well as their understanding of the actions observed in their own and the other participants' classes. The observation sheet (see Appendix A) prompts users to consider five constructs relating to a true DDD. Each of these constructs were scored using Likert-scale descriptors, with additional space for observer comments. After completing the lesson observations, the participants and we reflected on the process.

The data sources in the study included seven focus-group interviews; 24 lesson observations; lesson documents and materials including activity prompts, lesson plans, assessment rubrics, and examples of learners' work. All interviews and observations were conducted using BlackBoard Collaborate as interview platform. Video recordings of the lessons and materials used were shared via OneDrive. We stored all data in folders on OneDrive.

The interviews were of a semi-structured focus-group nature with pre-developed interview questions, of which more were added and some omitted. These interviews, conducted between myself and the participants, enabled goal setting, lesson planning, as well as reflecting on lessons presented and observed.

The interview data illuminated the observational data, while the lesson documents and materials supported data authenticity. Trustworthiness was established through detailed contextual descriptions, multiple classroom

practice observers, and repeated data coding procedures. Reliability was enabled through frequent member-checking that ensured accurate data interpretation.

### Data Analysis

Data coding and content analysis were done by highlighting text from the verbatim interview transcriptions in Google Docs during two levels of coding. Through repeated data coding, we managed to progress from codes, to categories and this resulted in themes (Saldaña, 2013). This supported a focus on the teachers' DDDs, as well as their challenges and levels of technology integration. The overarching themes that informed this study were the value of the study for teaching, the value of the study for learning, and identification and development of digital learning competencies. These coded themes were analysed to explore how the data addressed the research questions.

### Ethical Considerations

We obtained institutional ethical clearance. This enabled us to continue with the study and contact the participants at the study site. The school group chief executive officer, its principal and all four participants signed letters of consent in which full details about the study were provided. We not only ensured to gain participants' and parents' informed consent, but also ensured voluntary participation of the four teachers involved. The participants were free to withdraw from the study without prejudice at any time. Pseudonyms were used to refer to the participants, thus ensuring anonymity. Confidentiality was maintained through restricted data access rights, as this was only shared among the researcher, the supervisor, and the University.

## Results, Findings and Discussion

### Introduction

The findings of the practices of four secondary language teachers using tablets and MS Teams are presented here. Teachers' two lessons, their challenges associated with teaching with tablets and MS Teams, as well as their goals, framed within the digital learning competencies, are presented. An analysis of how teachers managed to address the challenges while achieving their set digital learning competency goals, is provided. Participants' changed levels of technology integration are also explored.

Table 4 summarises the two lessons presented by each of the four participants. Learners used their tablets to complete and design digital products like worksheets, animations, presentations and videos. Teachers used MS Teams as a vehicle for communication and assessment.

**Table 4** Lessons presented by participants

| Participant | Lesson 1 | Lesson 2 |
|---|---|---|
| David | Groups complete a worksheet on a slam poem via OneDrive and MS Teams | Groups retell a scene from *Spud* through digital animation using MS PowerPoint |
| Roy | Through direct instruction, learners encounter simple compound and complex sentences | Learners design narrated MS PowerPoints presentations to analyse a song |
| Lily | Groups summarise novel chapters by making Flipgrid videos | Learners write individual film reviews on *Die Pro* using Powtoon videos |
| Alexis | Learners design quiz questions on studied language rules using their tablets for the teacher's quiz on MS Teams | Learners make MS PowerPoint videos as prepared speeches to demonstrate the parts of a recipe |

To ensure that this CAR study was fruitful, the challenges that teachers faced in their teaching with tablets and MS Teams, whether they were individual or more general challenges, were explored. Participant challenges were classified in broad categories (see Table 5).

**Table 5** Participant' challenges while teaching with tablets and MS Teams

| Challenge | Participant |
|---|---|
| Technical challenges | |
| Outdated tablets | David |
| Infrequent software updates | David |
| Wide variety of devices among learners | Roy |
| Poor Wi-Fi connectivity or low connectivity speed | David and Roy |
| Technical glitches | David and Roy |
| Relevance of tools | |
| Relevant, language-specific apps not available | Lily |
| Difficulty to incorporate ICTs in subject | Roy |
| ICTs not used equally across subjects | Roy |
| Teachers' technical skill sets | |
| Low levels of interest in digital tool functionalities (e.g. online marking) | David and Alexis |
| Unfamiliarity with a range of tools | Roy and Lily |
| Insufficient training | David |
| Learners' skill sets | |
| Inability to use tools for academic purposes | All participants |
| ICTs can be distracting | Roy and Lily |

The participants' challenges correlated with the literature, including technical challenges like glitches (Raney, 2018) and network issues (Jahnke et al., 2014). The participants were concerned about learners' skill sets, specifically for academic purposes, as expressed by Montrieux et al. (2015). This relates to devices causing distractions, and non-academic use of devices (Jahnke et al., 2014).

### Setting Goals for the Study with Digital Learning Competencies

After the participants' challenges were clearly outlined, each set three study goals based on the 13 digital learning competencies. David's choice of competencies as goals was motivated by his vision for learner skills: "*I would want children and learners to be able to make their own presentations; to share and collaborate using platforms like MS Teams. I would like them to stop asking me to give them information but use the tablet in front of them to gather information and start reporting and using the information to collaborate to solve problems.*" Such collaborative learning experiences using ICTs align with the highest level of ICT integration of the DoE (2007).

Table 6 indicates each participants' study goals for digital learning competencies (see Figure 1).

**Table 6** Digital learning competencies as study goals

| Participant | Digital competencies as study goals |
|---|---|
| David | 2, 6, 13 |
| Roy | 3, 6, 8 |
| Lily | 1, 5, 9 |
| Alexis | 1, 3, 9 |

Competencies 4, 7, and 10 to 12 were not chosen as study goals by any of the participants. Only David included a leadership competency (13) because he felt confident enough to train others using his existing digital competence.

#### *David's challenges and competency goals*

David identified eight mostly technical challenges including the use of outdated devices, infrequent software updates, insufficient training for ICT integration, and the usual technical difficulties. He also identified teachers' lack of interest in doing online marking, and learners' lack of academically-oriented technical skills.

David identified Competencies 2, 6 and 13 as his study goals. He aimed to reflect on and challenge his own and other teachers' digital learning and teaching practices (Competency 2). Both David and Roy realised that Wi-Fi connectivity issues prevented learners from experiencing the planned collaborative lesson using ICTs like tablets. Agreeing with Raney (2018), the participants experienced frustration as the tools' functionality did not serve its intended purpose for all learners during the lesson. Roy reflected: "*If you are able to participate in the lesson, then it is effective; if you are unable to participate in the lesson because of the same technology, then it becomes ineffective*."

For Competency 6, David was open to new things, and learnt more about the functionalities of different tools: "*I didn't realise that PowerPoint is different on an iPad compared to a computer, and that it's different on an iPad compared to a Samsung device*." He successfully integrated many different applications for planning, presenting, and assessment during his lessons (see Table 7).

**Table 7** David's use of digital tools

| Digital tool | Description |
|---|---|
| MS Word | Learner collaboration |
| MS PowerPoint | Learners designed digital stories |
| MS OneDrive | Learner access to learning materials |
| MS Forms | Peer-assessment |
| MS Teams | Learner access to activity prompts |
| MS Chats | Learner communication |

David's employment of six different applications (see Table 7), helped his learners to become skilled users of digital tools and collaborators, resonating with Competency 6.

For Competency 13, David aimed for and managed to initiate peer support and collaboration. He supported his colleagues and benefitted from this personally. He reflected: "*It was good to speak to them about their ideas, because it helped me with my ideas.*"

*Roy's challenges and competency goals*

Roy listed 15 teacher challenges, grouped into nine categories (C) as indicated in Table 8. Eight of these challenges from seven categories were explored.

**Table 8** Roy's challenges of digital teaching

| Roy's challenges (C) | Number of challenges |
|---|---|
| C1: Teachers' unfamiliarity with tools | 1 |
| C2: The use of such tools within the educational setting | 2 |
| C3: The wide variety of devices used | 2 |
| C4: Unique challenges associated with online teaching | 3 |
| C5: Learners' experiences of teachers' use of digital tools | 1 |
| C6: Technology being only one method of teaching | 1 |
| C7: The dangers associated with ICTs | 1 |
| C8: Learners' digital skill sets | 1 |
| C9: Technical difficulties | 3 |

To address his challenges, Roy aimed for a better understanding of roles within the digital teaching environment (Competency 3). He also identified Competencies 6 and 8, aiming for the integration and transformation of learning through ICTs and resources.

From Lesson 1 to 2, Roy's approach changed significantly. His first lesson illustrated his belief that technology was not the only approach to teaching (C6). In his teacher-talk lesson he used direct instruction of language structures without formal assessment. His second lesson, however, incorporated many forms of applications, namely MS Teams for communication of learning outcomes, learners designed narrated MS PowerPoints, and online peer- and teacher assessments. Learners collaborated online, and assessments were done using OneNote and an MS Teams rubric. Learners were encouraged to use a variety of online sources to create their videos in MS PowerPoint including Flipgrid, YouTube, music apps, websites, animations, and pictures.

Roy's C1 was addressed by participants compiling a list of possible apps to use. Due to this exposure and support from David in planning for integration of digital tools, Roy addressed C1, while developing Competencies 6 and 8 as well. Roy also counteracted learner distraction by ICTs (C7) by planning learners' active, engaged learning with the tools.

Roy managed to present his second lesson reliant on ICTs and applications, but experienced technical difficulties while using tablets (C9). Valuable academic time was wasted because learners did not understand the online peer-assessment process. It is this wasting of time that frustrates teachers according to Raney (2018), and this needs to be addressed in the future.

Roy aimed for a better understanding of roles within the digital teaching environment (Competency 3). He reflected that throughout the study he could determine neither the amount of learning taking place, nor the contribution of technology to learning. Thus, he believed that Competency 3 was not developed. Yet, he contradicted himself when indicating his realisation of the value of the integration of digital tools by saying: "*We managed to integrate digital tools and I was able to successfully do that in the classroom situation and also, see how they impacted on the learning environment*."

For online teaching (C4), Roy's application of group work eased the assessment workload, and he even found that the planning for his second online lesson took less time than before. This was in contrast with ChanLin (2017) who expressed that planning for ICT integration was time-consuming. Roy addressed C3 by specifying which tools and/or platforms learners had to use to complete (i.e. MS PowerPoint), submit (i.e. MS Teams), and assess (i.e. MS OneNote) their work.

The observers identified that Roy's transformation from Lesson 1 to 2 was significant. This relates to teacher and learner roles, as well as the role of ICTs (Competency 3). While the teacher was the expert and coach during the first lesson, this was traded for roles of process mentor, technical assistant, coach, and facilitator during the second lesson. Learners progressed from receivers of information to collaborators, orators, designers, information seekers, and assessors. ICTs and applications enabled collaboration and creativity among learners, as well as assessment. By doing this, Roy addressed C5. Instead of learners being bored with teacher presentations, he replaced teacher slides with whiteboard writing (Lesson 1) and learners' designs of their own presentations (Lesson 2).

While Roy's beliefs about ICTs and their roles had not actually changed, he managed to highlight how roles could change based on the way in which they were used. This is highly meaningful as using tablets in teaching promotes new roles (Montrieux et al., 2015), as was evident from Roy's planning and teaching.

*Lily's challenges and competency goals*

Three of Lily's four challenges were addressed during the study. These included lacking knowledge about the skilful application of ICTs in teaching, a lack of useful apps for use in the Afrikaans classroom, and competing against the entertainment value of devices. She aimed to develop Competencies 1, 5 and 9 to employ various ICTs in relevant ways and to explore new tools (Competencies 1 and 5). She also wanted to use ICTs for the management and assessment of teaching and learning activities (Competency 9).

She addressed the challenge to apply relevant ICTs by exploring different ICTs, while also addressing Competencies 1 and 5. Her learners designed videos using different applications (Flipgrid and Powtoon), and learnt how to use these tools by watching YouTube tutorials. She indicated that she "*gives the learners all the tools they need to create an insightful review and a Powtoon*." MS Teams was effectively used to avail lesson material and MS Forms enabled online testing (Lesson 1) and assessment (Lesson 2). Lily's use of new tools addressed her first competency goal. She willingly spent time to change her pedagogy as proposed by Montrieux et al. (2015).

Lily utilised generic video apps for Afrikaans in both her lessons to address her challenge of finding relevant apps for her subject. During Lesson 2, Powtoon enabled a new and innovative approach to film study. She commented: "*The learners had to use their creative side and approach film study in a different way by using videos*." She felt confident to use these apps following David's support to set them up. As a result, she developed Competency 5.

Another of Lily's challenges was competing against the sheer entertainment value of ICTs (Jahnke et al., 2014). By employing YouTube tutorials, Lily enabled learners to build their skills in using video software while watching entertaining videos.

During the study, Lily employed ICTs to support her classroom and learning management (Competency 9). She effectively employed MS Teams to present lesson goals and content to learners, and conducted an online test via MS Teams. This improved Lily's productivity, as envisioned by DoE (2007). She appreciated the immediate feedback to learners reflected in the test scores. Yet, although ICTs were incorporated for the management of the assessment, learners' creative products (i.e. Flipgrid videos) were not assessed. Learners' Powtoon videos for assessment purposes in Lesson 2, however, enabled more creative assessment. The use of Powtoon activated learners' creativity. Lily commented: "*Without the technology (Powtoon website), learners (would) not be able to create their film reports in animated video format (more creative elements rather than text only were included e.g. music, pictures, animations, use of characters, internet pictures and information)*." Learners' videos were also peer-assessed using MS Teams.

*Alexis' challenges and competency goals*

Alexis identified two challenges: learners struggled to complete online assignments, and she steered clear of online marking. As study goals, she wanted to be more open towards the possibilities of ICTs (Competency 1), and explore how teacher, learner and tools' roles affect the teaching scenario (Competency 3). Aware of her dislike of online marking, she wanted to explore the incorporation of digital resources to support classroom management, assessment, and feedback (Competency 9).

For Competency 1, Alexis displayed her enquiring mindset about ICTs while planning for Lesson 1: "*I'm actually looking for ideas how to incorporate level 3 and 4 (of the substitution augmentation modification redefinition model) because I feel like my lesson is very level 1 and 2*." During both lessons, she decided to use familiar tools in new ways. During Lesson 1 she used the MS Teams quiz function, but had learners design the questions, not herself. This assisted her in exploring a type of online marking, one of her challenges. For her second lesson, learners used MS PowerPoint to make their own videos.

For Competency 3, Alexis explored different roles. She acted as expert, process mentor, and coach during Lesson 1. While teacher-talk still dominated the lesson, learners were actively engaged in the roles of producers, collaborators, peer-teachers, and creators of their own learning paths. She also managed to support the adaption of different roles as suggested for tablet teaching in the work of Montrieux et al. (2015). During Lesson 2 Alexis acted as expert, facilitator, process-mentor, and learning companion. She provided examples, guidance and feedback to learners. Her learners were collaborators while designing their group videos, evaluators in assessing the videos, as well as reflectors and peer-teachers.

Competency 9 assisted Alexis in considering the use of tools for classroom-related matters including management, assessment, and feedback. The digital quiz of Lesson 1 enabled automatic marking and immediate feedback, a step towards addressing Alexis' challenge about online marking. The digital tool improved productivity and assisted with the management and administration of assessment.

Alexis reflected that she managed to address all three of her competency goals. She realised how valuable the use of ICTs was (Competency 1) and managed to include a variety of tools for teaching and assessment purposes (Competency 9).

### Different approaches to addressing Digital Learning Competencies as study goals

Both Lily and Alexis identified Competencies 1 and 9 as study goals, while David and Roy aspired towards Competency 6. The participants' different approaches to address these competencies are highlighted here.

Lily addressed Competency 1 by designing lessons for learners to use new tools in new ways. Alexis used tools that she used before in new ways. Their purposes for using digital tools differed. Lily wanted to explore new ICTs and applications for teaching, while Alexis aimed to improve her technical application and integration level of the use of ICTs.

The integration of ICTs (Competency 6), as aimed for by both David and Roy, were practised differently. From the start, David successfully aimed for the effective integration of tools for a wide variety of teaching and learning activities. This included communication, teaching, assessment, and learner involvement. Roy, on the other hand, decided to increase his level of integration from Lesson 1 to 2 to such an extent that a radical difference in the use of ICTs for teaching, assessment, and learner collaboration was observed.

For Competency 9, Lily and Alexis benefitted from the online assessment tools' automatic marking function in Lesson 1. For Alexis' second lesson, however, she progressed by including online peer assessment on MS Forms. Lily, on the other hand, assessed learners' creative products i.e. learner videos.

By using the digital learning competencies as study goals, the participants were motivated to explore and integrate a wide variety of applications available on tablets. The participants purposefully explored how MS Teams applications and generic applications could support English and Afrikaans language teaching practices. While MS Teams was used for learning and assessment management, learners developed their skill sets as creative product designers with their tablets in hand. Peer-support as a goal was experienced as a key driver behind the successes and overcoming of challenges described.

### Participants' Levels of Technology Integration

Table 9 summarises participants' focus on improving their levels of technology integration.

**Table 9** Participants' increased level of technology integration

| Participant | Lesson 1 | Lesson 2 |
|---|---|---|
| David | Level 4 (modification) to 5 (redefinition) | Level 5 (redefinition) |
| Roy | Level 1 (entry) | Level 5 (redefinition) |
| Lily | Level 4 (appropriation) | Level 4 (appropriation) |
| Alexis | Level 3 (adaptation) | Level 4 (appropriation) |

Participants had varying levels of increased integration. David's first lesson (between Levels 4 and 5 of the levels of technology integration) included learners' own use of technology, choice of learning content, and online group organisation (Level 4). At Level 5, he presented a lesson which was inconceivable without the use of ICTs (Puentedura, 2006). This lesson design experimented with learners using MS PowerPoint to create, collaborate, and reflect (DoE, 2007; Sandholtz et al., 1997).

Roy's first lesson was at an entry level, where technology was used to a very limited extent for content-driven, traditional teaching. Although online learning took place, Roy observed that the "*technology aspect (was) missing*" and David agreed. His second lesson design was at Level 5, as the lesson design experimented with learners using MS PowerPoint to create and collaborate, while they had to reflect on their peers' work through peer assessment (DoE, 2007; Sandholtz et al., 1997).

Lily's first lesson was at Level 4. A wide range of tools was used and learners produced videos for a real audience, their peers. Learners executed their choice of how content was presented and created videos using their tablets and apps. Lily's second lesson was also at Level 4. Since she, by then, appreciated the value of technology, she included technology-based, more learner-centred activities. She employed new strategies (Sandholtz et al., 1997) (i.e. YouTube tutorials that replaced teacher explanations) and learner choice (Florida Center for Instructional Technology, 2020) for the design of learners' Powtoon videos.

Alexis' first lesson included ICTs in ways that learners could contribute to the production of new materials. She used the tools to improve productivity, while assisting with the management

and administration of assessment (i.e. Level 3). Her second lesson was at Level 4, since a learner-centred activity that included both learner and computer interaction was done, while collaboration and creativity were also key (Sandholtz et al., 1997). Learners could choose their technology by selecting their preferred apps (Florida Center for Instructional Technology, 2020).

The participants managed to address most of their identified challenges, while also improving their technology integration levels. Significant improvements were seen in how teachers designed their lessons aimed at learners' use of tablets, MS Teams and the associated apps to manage and create their learning. It was advantageous that these practices also improved productivity in the teaching and learning of language.

### Implications for Policy and Practice

While teachers and learners continue to require effective support to overcome their technical challenges, we showed how teachers' commitment to ICT integration can indeed transform education. Since the study participants progressed owing to peer-support, peer-support and institutional support are recommended. The creation of peer-support groups with frequent, official meetings, workshops and practice reflection opportunities can assist in addressing teaching challenges while also celebrating their successes.

## Conclusion

The four secondary school language teachers who participated in the study managed to address their digital learning competencies study goals by addressing their approaches to digital teaching with tablets and MS Teams. The participants expanded their competencies by purposefully planning their lessons and improved their levels of technology integration. The results of this study indicate that MS Teams was effective in exposing teachers and learners to opportunities for the management of and engagement in creative, collaborative work, thereby mimicking learners' future workplace realities. The ubiquitous use of tablets and MS Teams enabled the implementation of a wide variety of generic applications that were suited for language teaching and learning. A limitation of this study was that we did not explore the long-term effects on the participants' teaching practices and digital competencies.

The extent to which ICTs and applications were integrated into the language teachers' teaching in two lessons for the four participants differed. Furthermore, participants overcame many of their everyday teaching challenges. Since not all of teachers' challenges could be addressed, it is recommended that extended teacher support towards the addressing of daily challenges is instituted. This includes developing skill sets to overcome technical difficulties, as well as sustained support to integrate different applications for language teaching and learning in classrooms using tablets. Teachers also need active support and encouragement to develop their digital learning competencies. Research-based initiatives as presented in this study are recommended to support teachers' professional development needs. Through the DDD context of the study, participants managed to integrate and transform their teaching, learning, assessment, and management practices by means of sound and creative digital tool integration, with support from their colleagues.

## Authors' Contributions

AvR wrote the article using data from her M.Ed. MAM was the supervisor who checked the article and made suggestions for improvement. Both authors reviewed the final manuscript.

## Notes

i. This study is based on the master's dissertation of Annèl van Rooyen.

ii. 

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**Appendix A: Observation Sheet for Digital Didactical Design**

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| Digital Didactical Design elements | Level descriptors |
|---|---|
| **Teaching Goals/ Intended Learning Outcomes** Clear and visible to students | 1: Not clear / visible; no communication; focus on content<br>2: Shows indicators of 3 and 1, but not fully 3 or 1<br>3: Oral communication<br>4: Shows indicators of 5 and 3, but not fully 5 or 3<br>5: Clear and visible to students; indicates criteria for learning progress from the start; provided on a source; focused on skills development; co-aims of students are included. |
| **Learning Activities (LAs)** Toward deep learning by producing in engaged, authentic, open settings | 1: Textbook teaching (surface learning e.g. memorising, remembering, repetition of facts); theoretical, not practical problems<br>2: Shows indicators of 3 and 1, but not fully 3 or 1<br>3: Surface learning and first signs of deep learning (i.e. active, collaborative, authentic, goal-directed, and reflective); Students are not as engaged as in 5: Bored/Too many other distractors<br>4: Shows indicators of 5 and 3, but not fully 5 or 3<br>5: LAs have a range from surface but a focus on deep, meaningful learning with indicators such as active, collaborative, authentic, goal-directed, and reflective; students produce something, engaged classrooms, collaboration with peers; activities are connected to the students' world and include a real-world problem, a real audience; students critically reflect on existing content, relate knowledge to new knowledge; students produce with internet assistance and other resources from outside the school |
| **Assessment** Process-based | 1: Summative feedback at the end (more summative than formative)<br>2: Shows indicators of 3 and 1, but not fully 3 or 1<br>3: Coincidental feedback (not only technical assistance); teacher-feedback only when asked; passive support<br>4: Shows indicators of 5 and 3, but not fully 5 or 3<br>5: Criteria for learning progress is visible to students from the start; feedback/feed-forward only at the end but mainly process-based assessment for learners' development; teacher plans and creates pro-assessment (i.e. formative evaluation); a range of self-assessment, peer-reflective learning and teacher feedback (e.g. students document learning electronically and teachers then requires learner reflection) |
| **Social relations** Multiple roles (not only consumers) | 1: Teacher as the expert only; students are consumers (i.e. solve closed questions; tasks with one correct answer)<br>2: Shows indicators of 3 and 1, but not fully 3 or 1<br>3: Teacher fulfils one or two roles, but mostly expert role; teacher does not support active student engagement<br>4: Shows indicators of 5 and 3, but not fully 5 or 3<br>5: Teacher adopts different roles (i.e. expert, process mentor, learning companion, coach); foster students to adopt different roles (consumers, producers, collaborators, critical reflectors); teacher engages students, activates students to change roles; students are in several roles (peer-teachers; construct own learning aims; create own learning tasks); teacher support for student reflection on roles and development of new roles |
| **Web-enabled technologies** | 1: SUBSTITUTION (Technology replaces pen and paper): Low extent: Drill and practice; Students primarily work on their own with technology; unrelated to real-world<br>2: Shows indicators of 3 and 1, but not fully 3 or 1<br>3: Between AUGMENTATION and MODIFICATION (Technology substitutes existing media): Medium extent<br>4: Shows indicators of 5 and 3, but not fully 5 or 3<br>5: REDEFINITION (Technology is used in a whole new way). High extent: Multimodal (e.g. writing texts, camera app, digital paintings, using apps for collaborative creation); students construct, share, create and publish their knowledge to a real audience; students use online resources (actively select resources beyond the best school library); signs of cross-action (use online-world to solve a learning activity |