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Understanding teachers' usage of YouTube as a pedagogical tool: A qualitative case study of basic school teachers in Ghana

Ama Otwiwah Adu-Marfo
Department of Adult Education and Human Resource Studies, University of Ghana, Legon, Ghana

Olivia Adwoa Tiwaah Frimpong Kwapong
Department of Adult Education and Human Resource Studies, University of Ghana, Legon, Ghana

Yaw Oheneba-Sakyi
Department of Adult Education and Human Resource Studies, University of Ghana, Legon, Ghana

Janice Miller-Young
Donadeo Innovation Centre for Engineering, University of Alberta, Edmonton, AB, Canada

Abstract

YouTube has been widely considered as a pedagogical tool over the last few decades. Recent findings from research portray YouTube videos as an instructional part of learning that contributes to best practices in teaching. Much of the studies have focused on usage by teachers and students at the tertiary level without much attention given to basic school teachers. Using an exploratory qualitative case study design and the ICT Pedagogical Beliefs Classification framework, we explored teachers' usage of YouTube as a pedagogical tool. We drew on the experiences of 18 teachers in 3 private schools in Ghana to find out how Youtube was used in instruction. Four dominant ways of usage were identified. YouTube was used as a teaching tool, a means of enhancing specific topics, a means of learning new and varied ways of teaching, and as a means of developing teachers' professional competence. Findings showed that whilst some of the ways of usage align with constructivist methods of teaching others still fall within traditional and teacher centred approaches to teaching. We argue that for teachers to enact meaningful pedagogies with technology through a more student-centred model, their knowledge and skills need to be developed alongside the reshaping of their motives and reasons and subsequently the ways in which they use technology for teaching. We recommend the planning and reinforcement of innovative instructional design of technological integration for teachers through informed policy and the use of training interventions

Corresponding author:
Ama Otwiwah Adu-Marfo, Department of Adult Education and Human Resource Studies, University of Ghana, P.O.Box LG 31, Legon GE-216-0715, Ghana.
Email: aoadu-marfo@ug.edu.gh

to build new skills geared towards constructive and creative teaching suited to developing a net generation of students.

Keywords
Constructivist, creative, Ghana, pedagogical, teachers, Youtube

Introduction

The remarked use of YouTube by schools and institutions has come about as a result of its user-friendly nature and inherent ability to promote learning (Ho, Chen and Ng 2017). Manca and Ranieri (2016) have described social media tools such as YouTube as powerful drivers for change in teaching and learning. Pattier (2021) maintains that the advent of YouTube in 2005 altered the potential of using video as part of educational resources in teaching and learning processes. Researchers particularly submit that well-selected YouTube videos as a teaching tool enables students get more intensely involved with subject content, making it a viable option for students to obtain learning material and for instructional purposes.

Increasingly, researchers submit that there is merit in the use of instructional videos. Additionally, increased depth of understanding of course content has been traced to usage of YouTube videos. As a multifunctional means for content transactions within and outside the classroom, it not only offers a great environment for learning, but also for digital entertainment. YouTube offers unrestricted access to a considerable number of educational videos (Buzzetto-More, 2014) therefore making it a practical and worthwhile choice for students to find useful material for learning purposes.

Integrating technology into the curriculum has become a necessity due to increasing interest in policies geared at improving educational outcomes in Ghana (Abedi et al., 2023). Over the years, Ghana adopted some Information Communication Technology (ICT) strategies as evident in the Ghana ICT for Accelerated Development Policy 2003, and the ICT in Education Policy 2008 (MOE, 2015). These policies brought about some improvement in ICT usage in Ghana. Nonetheless, these significant improvements did not reflect on the educational use of technology in most schools (Nsiah-Asante, 2014).

Following these developments, the new Standard-based Curriculum was introduced in September 2020. The aim of the new curriculum is to improve teaching and learning and usage of ICT as a teaching tool through learner-centred pedagogy (Agbofa et al., 2023). The standards-based curriculum requires teachers to engender the transition from teacher-centered pedagogies to student centred and social constructivist teaching methods through the usage of modern pedagogical technologies (MOE, 2015).

Studies have been conducted on ICT use in secondary schools in Ghana (Amenyedzi et al., 2011; Buabeng-Andoh, 2015). Further studies have examined barriers impacting teachers' integration of technology in teaching with some of the prevailing factors such as the nature and capacity of their technology integration practices often being interrogated (Buabeng-Andoh, 2019; Danso and Kesseh, 2016). Others have looked at the impact of social media on Ghanaian high school students (Asare-Donkoh, 2018) and students' engagement with social media for teaching and learning (Quansah et al., 2016). Despite its established usefulness to teaching and learning, very few studies have examined the use of YouTube as a teaching tool from the perspectives of basic school teachers in Ghana. This study therefore addresses this gap by investigating teachers' use of YouTube as a

pedagogical tool in the classroom and extends the work of previous researchers on YouTube in education. The study is guided by the research question: How is YouTube used in teaching and learning in basic schools?

Data gathered from the study will serve as a resourceful repository to inform the development of school policy on technology usage in schools and the formulation of context specific policies. In addition, the findings will provide data to enhance quality teaching and learning with new technologies and inform the promotion of creative teaching practices at the basic school level. Implications for policymakers will be to develop tailored interventions that enhance teachers' professional development through meaningful use of technologies in the classroom.

Literature review

Instructional potential of YouTube videos

Within the peripheries of 21st century learning frameworks, the potential of video technology for instruction in the classroom is high (Ogirima et al., 2021). Positive gains have been recorded in student outcomes owing to the incorporation of video technology in teaching (Bullo, 2021; Moghavvemi et al., 2018; Muniyandy et al., 2015; Zhou et al., 2020). Scholars are of the view that, usage of technology such as Youtube in teaching and learning, boosts academic performance (Bae and Baxter, 2018). Findings from previous research have discovered Youtube as a tool that enhances course discussions, and aids tutoring in online courses (Berk, 2009; Jones and Graham, 2013; Logan, 2012; Miller, 2009). Some studies have found that Youtube is mainly effective in supporting wholly online courses, whilst others maintain that online video sharing services are more beneficial when augmenting instead of substituting blended teaching demonstrations. (Kelly et al., 2009).

Evidence based researches have revealed that apart from its popularity with students, the usage of videos leads to comparable or better learning gains when compared to pictures and diagrams within an effective instructional design. (Castro-Alonso et al., 2015; De Koning et al., 2019; Hendersin et al., 2015). According to Abeysekera and Dawson (2015), usage of videos for tutorials have been found to produce higher learning gains in comparison with live lectures. Additionally, students' motivation to learn is increased significantly through the use of videos. (Craig and Friehs, 2013).

Muniyandy et al. (2015) in their study on incorporating YouTube videos as teaching materials found that substantial learning improvement occurred mainly when explanations about the videos were included. These findings buttressed that of Tan and Pearce (2011) who confirmed that YouTube was an effective medium and tool for supporting and improving students' learning when teachers made provision for further explanation of video content. Moghavvemi et al. (2018) also argue that students's learning experiences are enhanced when relevant videos are employed for teaching subject content and are used as complementary learning resources.

A study by Zhou et al. (2020) showed that due to expected positive gains and learning outcomes, students preferred to use YouTube as a learning source. This supports the argument that when educational videos are aligned to lessons, students are more motivated to patronize them. Furthermore, in order for lessons to be more involving and interactive, video lessons should be employed as supplementary resources for modular teaching. Bullo (2021)

Interestingly, Greenberg and Zanetis (2012) found in their study that instructional videos with shorter segments had stronger appeal than those with longer segments thus advocating for the use of videos not exceeding 15 minutes. Further, online videos were found to be an educational "enabler and complimentary tool" for instructional and learning processes that generates higher involvement with content, improved interaction, intense discussions, improved transfer of knowledge and

enhanced memory capacities leading to augmented neural development and academic performance (Greenberg and Zanetis, 2012). They concluded that net generation students are visual and spatial learners possessing abilities to carry out multiple tasks by using multi-media and are therefore motivated and spurred on by the use of online videos.

In recent years, there has been rising interest in teachers' engagement with Youtube as a pedagogical tool and its potential to improve their personal and professional capabilities (Bett and Makewa, 2020; Carpenter et al., 2020; Nochumson, 2020). Additionally, teachers' confidence was found to be heightened by their usage of YouTube in teaching subject content. Further, there were possibilities for developing unique pedagogical knowledge (Blonder et al., 2013). Online video platforms such as YouTube have been found to offer teachers access to global experts, where they can exchange ideas, as well as make use of online videos in illustrating abstract or difficult-to-perceive phenomena (Fyfield, 2022).

Frameworks for understanding teachers' technology usage in the classroom

Different authors have described teachers' usage of ICTs from varied perspectives. Six categories of ICT use by teachers were identified by Russell et al. (2003). These included: use of ICTs for lesson preparation, material production, students guiding, special education, email use, and also for recordings and registers. Van Braak, Tondeur and Valcke (2004) came up with two typologies of ways or patterns of usage of ICTs in schools: support of teaching processes, and an effective use of those resources in teaching development. Teachers' ability to effectively use ICTs in teaching was influenced by variables such as age, gender, digital capability, attitude towards ICTs, and disposition towards change and innovation.

A useful framework for conceptualizing the dimensions of ICT use was devised by DEYTA (2001) in which he identified four interrelated and overlapping dimensions of ICT usage in schools: a tool for use across the curriculum or in separate subjects, a tool for embracing students learning outcomes within the existing curriculum, an integral component of wider curriculum restructuring, and an integral component of reforms which will change the way school is structured and organised.

Various reasons and beliefs for which teachers integrate technology in teaching have been proffered. Downes et al. (2001) grouped teacher beliefs or goals for integrating technology as: (1) development of skills, (2) ICT as a teaching and learning tool, and (3) ICT as changing content and pedagogy, which encompasses the goal of using technology to transform existing curriculum practices. Prestridge (2012) classified four types of ICT beliefs as: (1) foundational (using ICT in all subjects), (2) developing (curriculum implications of ICT), (3) skill-based (teachers need to acquire ICT skills), and (4) digital pedagogical practices (ICT promotes creative learning learning). Ertmer et al. (2012) discovered three types of beliefs associated with the use of technology: (1) supplementing the required curriculum where teachers believe that technology can deliver content and present information learned, motivate, reinforce and practice skills; (2) supporting/enriching the existing curriculum where teachers believe that technology is an educational tool for student engagement, collaboration, and higher-order thinking; and (3) facilitating an emerging curriculum where teachers believe technology is a pedagogical tool for 21st -century education that can transform the way students learn.

In their Classification Framework for Technology Enabled Practice (Frame TEP), Prestridge and De Aldama (2016) widely classified ICT beliefs into three dimensions: (1) developing computer skills and supplementing subject skills, (2) enriching existing curriculum, and (3) facilitating new ways of teaching and learning. Building upon the work of scholars mentioned above, Abedi et al. (2023) further devised four separate groups of teachers' pedagogical beliefs and reasons for using

technology in teaching. These are: developing students' technology skills, supplementing/supporting the curriculum, enriching or extending the curriculum and facilitating new ways of teaching and learning.

The resulting framework from Abedi et al. (2023) classification is the ICT Pedagogical Beliefs Classification Framework. In their estimation, teachers' beliefs and usage of technology which fall within the first two types of pedagogy (developing students' technology and supporting the curriculum) tend to be traditional or teacher centred. Whereas teachers' motivations for and usage of technology which fall within the last two pedagogies (enriching the curriculum and facilitating new ways of teaching and learning) are constructivist and student-centred. This framework served as a basis for discussing and analysing teachers' usage of YouTube in the classroom for this study. The framework is represented in Table 1 below:

Methodology

To address the research question, this study employed a qualitative exploratory case study design. The qualitative approach was employed to gain in-depth information on YouTube usage by highlighting the perceptions and views of teachers. The rationale for which case study designs are used is to conduct investigations of a specific contemporary phenomenon within a well-defined context (Yin, 2014). This aligns with the objective of the current study. The use of social media tool YouTube was explored from the perspectives and experiences of teachers in private basic schools.

The population for the study was teachers in the Greater Accra region of Ghana. The target population was teachers in three private schools in the Adentan Municipality. Purposive sampling techniques: snowball and convenience sampling approach were used to recruit participants. With the snowball sampling technique, the researcher first chose a small group of teachers appropriate for the study. These then suggested other participants with relevant experience and related characteristics to participate in the study. Teachers in Junior High Schools (JHS) Forms 1-3 were selected for the study. Teachers were drawn across the different subject areas (9 subjects) to allow for a broad understanding of YouTube usage across the respective subjects. A total of 18 teachers were interviewed from 3 schools. Two (2) focus group discussions were held in 2 schools. Each group consisted of six (6) participants. All the focus group discussions were audio recorded with the permission of the participants. The sessions were moderated with the assistance of a research assistant. Data collection tools included an interview guide.

Ethical clearance was sought from the Ethics Committee for the Humanities (ECH), University of Ghana - ECH Approval number (ECH 115/17-18). Verbal permission and written consent were

Table 1. ICT pedagogical beliefs classification framework. Abedi et al. (2023).

Pedagogical beliefs about technology use	Developing students' technology skills	Supporting/supplementing the curriculum	Extending/enriching existing curriculum	Facilitating new ways of teaching and learning
Type of Pedagogy	Traditional/Teacher-Centred		Mixed-balance	Constructivist/Student-Centred

obtained from participants. Participants were assured of confidentiality and anonymity in the study as such generic names/labels were assigned to the narratives. Peer debriefing was also employed to enhance credibility and to reduce the event of bias in the development of themes and interpretation of findings.

Participants and context of the study

The selection of the school municipality and schools did not follow any specific criteria and was based on a convenience sampling method. The three private schools considered relevant and equivalent to all other schools for the study objective were chosen due to budget-constraint purposes. Other reasons included the ease of accessibility and how quickly data could be conveniently collected from a readily available pool of participants,

Ages of teachers ranged between twenty-seven (27) and fifty-seven (57) years. All the teachers were professionally trained with at least a diploma and bachelor's degrees in education with the two highest qualifications being a master's in education and law. The years of teachers' work experience ranged between four (4) to thirty-two (32) years. Teachers were drawn from varied subject areas: Mathematics, English Language, Integrated Science, Social Studies, Information Communication Technology (ICT), French, Art and Design, Religious and Moral Education, Life Skills. Out of the eighteen (18) respondents, (10) were male and eight (8) were female.

Data analysis

Data was analyzed thematically using Braun and Clark's (2019) six step approach to identifying, analyzing and reporting patterns. Thematic analysis is used for analysing qualitative data, particularly in studies that aim to explore individuals' perspectives and derive meaning through shared interpretations. Data was gathered through audio recording from in-depth interviews. These were played back repeatedly and transcribed verbatim. Transcription of the data formed the first phase of the analysis. This process provided a means of early familiarization with the data. All the data sources were read through severally and the significant ideas, key words and interesting statements that supported the research questions were noted. After transcription, an inductive coding process was employed to identify, sort and categorise initial codes. The data was coded bearing in mind the specific research questions. The ideas that seemed significant in addressing the research questions were coded. Codes that had bearings with the research questions and were consistent in the interviews were noted. After the initial coding, a period of about two (2) weeks elapsed following which the data was recoded to ensure credibility and consistency in the process.

The next stage after the coding process was the development of themes. Through iterative analysis, the codes that were related and clearly fitted together were organized into themes that addressed the research question. These formed the basis of analysis for the study. These themes underwent recursive finetuning, and definition, leading to the identification of distinct final themes that accurately captured the meanings conveyed by the data and represented participants' views about how YouTube was used in teaching in the classroom.

Credibility

To enhance credibility, the study made use of triangulation of data sources. The study employed a mix of methods such as in-depth interviews and focus group discussions. This helped in reducing bias usually associated with a single source. According to Baxter and Jack (2008), using different

methods compensates for their individual limitations and exploits their respective benefits. The study's credibility was further improved by member checking. Summaries of the interviews and initial interpretations were randomly given to six participants for their clarification and to confirm that the narrations were reflective of their submissions. In order to enhance transferability, this study provided thick descriptions of data. It provided extensive and detailed information regarding methodology and context explaining and clarifying all the research processes from data collection, context of the study to production and final report. Below is a table showing the themes and summary of main ideas from the data (codes).

Findings

Four key themes emerged from participants' responses about the use of YouTube in teaching. These were: the use of YouTube as a teaching aid, the use of YouTube to enhance specific topics, YouTube as a means of acquiring varied methodologies in teaching and YouTube as a means of teachers developing their professional skills. Table 2 below shows the themes and a summary of main ideas from data/codes:

YouTube as a teaching aid

Teachers relayed how YouTube was used as an aid to explain concepts that the students were finding difficult to comprehend. An integrated science teacher narrated how he used YouTube videos to bring the teaching on "vegetative propagation" to the level of comprehension of the students. The teacher narrated that after several attempts of failing to bring the discussion to a successful close, he decided to show some videos on the subject. This approach yielded the desired results:

> *For me, the videos are like a teaching aid. I was teaching a topic on vegetative propagation in Biology and then they were not getting it. The next day, I downloaded a video from YouTube. They saw it and then began to appreciate better what I had taught them (Teacher 5).*

A physics teacher shared her experience on how she used Youtube in teaching. Videos from YouTube were used as a means of enabling students to visualize the concepts and to secure their attention.

Table 2. Themes and summary of main ideas from data/codes.

Research question	Themes	Summary of main ideas from data (codes)
How do you use YouTube in teaching?	1. Teaching aid	Facilitating difficult concepts for visual and graphical demonstrations for planning lessons
	2. Enhance specific topics	Additional source of information apart from textbooks improved comprehension
	3. Acquire varied teaching methods	Enriching delivery styles learning from different teaching securing ideas from teachers around the globe
	4. Professional development of teachers	Accessing useful materials to improve skills Feedback and exposition from other professionals connection with teaching professionals across the globe

I have these virtual videos that were produced by other teachers across the globe, they are able to show most of the concepts, how it is done and how it works. When I use them, the students really understand the concepts better and it enhances easy learning…they get the concepts faster. (Teacher 12)

A french teacher in a focus group discussion shared similar comments:

I have these clips from YouTube that I use to aid me with my lessons. So, I wanted them to know the pronunciation of some French words and also the oral aspect. I selected videos on oral presentation of particular words. When the videos were played the students could identify better with the words. They kept repeating them even after the lesson (Teacher 5, FGD)

Biology, physics and french teachers respectively showed how Youtube served as a teaching aid by enabling better appreciation of concepts and enhancing easy learning.

Using YouTube to enhance specific topics

Teachers underscored the value of social media in supporting and strengthening the information provided during lessons. A social studies teacher shared her experience of how she used YouTube to enhance her understanding of the topic. Knowing that she had no means of showing the live videos to her students, she watched the YouTube videos on how eclipses occur and got a vivid visualization of the whole process. Thus, her understanding was heightened enabling her to describe to her students more vividly and with much better understanding and insight.

For example, in teaching about the eclipse, the rotation of the earth, it was so clear when I saw the video of it. You know in the textbook, it was just a drawing, a picture, but when I went online to watch the YouTube videos, I was able to understand firsthand before going into the class to explain to the students. (Teacher11).

A math teacher showed how he used YouTube as a medium for enhancing understanding of lessons on graphs**.**

For instance, if I'm teaching graphs even if I have a graph board, it may not be enough to make them really understand what I really want them to, so I go to YouTube and they can see it being done….it makes it easier for them (Teacher 1).

A history teacher re-echoed the math teacher's stance. He explained how, by showing the students YouTube video posts from Facebook, the lesson on primary documents was enhanced.

for instance, I was teaching primary sources and secondary sources and they needed to see some primary documents. I couldn't take them to the archives, neither did I have any primary document… but we have a platform on Facebook where someone posts YouTube videos on primary documents, photographs of former President Nkrumah and stuff like that. So immediately, I could open to that platform and show them pictures from there. I could direct them to go to that platform and see pictures so in that case it works for me and for the students (Teacher 2)

A social studies teacher in a focus discussion group explained how the colourful effects of an abstract concept added value to the learning experience.

...so recently we did a topic on mangrove swamps and choral reeves and you know those are beautiful things so you imagine a very colourful video telling you about its formation, its nature, the hazards posed to it and all of that and I'm not standing in front of you one hour just blabbing it out. I'm showing you a video, you get the sound you get the picture, I mean put yourself in my students' shoes, you'd enjoy it. (Teacher 3, FGD1)

For social studies, math and history teachers, images and pictures in YouTube videos used in teaching impacted on students learning and comprehension abilities

YouTube as a means of acquiring varied methods of teaching

Results from the study also showed that teachers' competences were enriched through YouTube videos that provided varied methods of teaching. Through the use of YouTube, teachers adopted new styles and forms of delivering lessons. The YouTube videos offered them a host of opportunities from other qualified teachers all over the world. Teachers secured materials and ideas from different sites and from specific practical sessions that others had tried and their feedback were sources of reference for them. A math teacher recounted:

I can say in so many ways, for me as a teacher, through YouTube videos, I've learnt diverse methods of problem solving, beyond what I knew, because you get to download videos that other teachers have shared on platforms. It's the whole world on the same platform so ...you get to know different approaches and I benefited from that .. I've been able to learn better methods of teaching..., the approach. You get to share and others also share their information (Teacher 9)

A life skills teacher shared her views on how she used YouTube videos to gain new methods of teaching

Last week for instance, we were doing life skills and some of the students were not really getting what we were doing. So I went on to YouTube to see if there was another method of teaching or making it easier and I got a lot. So I used one method by a man from India, where he used a different approach. When I used it we were able to understand it more than what I was teaching initially (Teacher 10)

Discussions from focus groups buttressed teachers' narratives on gaining varied methods of teaching through YouTube. A science teacher shared his views:

..... you get very useful materials and ideas on how to teach a particular subject. What others have tried, their responses on it, their feedback on it, so one can also use those methods by just going through or even suggested practicals that other teachers have tried on specific topics, they work beautifully, you can get them on YouTube and use them, so it enhances new ways you could teach the topic,...variation, and how easy it is to get the materials you would need so it makes it better and easier. (Teacher 4 FGD 2)

Teachers' narrations showed how social media tool such as YouTube was used to gain additional teaching skills. Apart from them benefitting from what others put out there, they were also able to share with others what worked or what did not work in particular situations and instances. Thus, they gained additional ways and methods of problem solving.

Using YouTube for professional development

Respondents explained how social media was used to gain added information from other teachers across the globe and on subject matters that they needed further clarifications on. In their view, they learnt from other teachers and from materials on YouTube in order to improve their efficiency and skills at teaching. A male Information Communication Technology (ICT) teacher narrated:

> *YouTube helps me in building my capacity in teaching. I think so because there may be something I don't understand or even something I am having trouble explaining. There are lots of teachers who put their material on YouTube so I go there to see how different teachers explain a concept and that aids me in knowing how best to handle my students. (Teacher 3)*

A female math teacher shared her experience;

> *I go there to learn, get more information, and prepare myself well before I get to the classroom. I go to YouTube, I study more about topics I've forgotten about, for efficiency. I sometimes ask my teacher friends on social media, how is this done if you want to solve this such a question, how is it done and they help…I realise that seeking assistance from watching some of these Youtube videos actually helps me improve my teaching skills (Teacher 6)*

A participant from a focus group discussion shared her views:

> *We have other social networks that are school based. We usually need authorization from Cambridge and a code from partner schools. Through YouTube videos, we share ideas on particular topics, and get information that feeds into our lesson development. I would say we learn a lot as teachers from some of these videos and develop our competencies in teaching (Teacher 6, FGD 1).*

New insights, methods and approaches to teaching were gained through the use of Youtube videos for instruction. In addition, teachers benefited professionally as video clips from different teaching platforms helped in the preparation of their lessons and in gaining new knowledge.

Discussion

The study provides insights into how Ghanaian teachers in private schools use technology such as YouTube in the classroom. Findings showed that teachers were conversant with using technology and found YouTube a worthwhile tool for effective teaching and learning. The main ways in which teachers used YouTube were as a teaching tool to improve lessons, a means of facilitating specific topics thereby enriching the curriculum, a means of acquiring varied methods of teaching and a means of developing their professional skills as teachers. Drawing on the ICT Pedagogical Beliefs Classification Framework, it is evident that the predominant ways of using technology by teachers in this study falls into three out of the four aspects of the framework: supporting the curriculum, enriching existing curriculum and facilitating new ways of learning.

Teachers in the respective subject fields: Science, math, social studies, french etc. relayed how YouTube videos were used as teaching tools to enable the students comprehend difficult or complex concepts. This means of using technology in the classroom corroborates with the belief that technology is seen as a tool that can facilitate instruction, support and enrich lessons/curriculum (Downes et al., 2001). These modes of teaching also align with the 'functional' pedagogical beliefs

identified by Van Braak et al. (2004) in which strategic patterns of use of ICTs in schools included; a mere support of teaching processes. Findings from this study highlighted teachers' views of how the use of YouTube videos were found to support teaching processes and increase comprehension. These findings were also established by Buzzetto-More (2014) who revealed that YouTube videos increased students' depth of understanding and course content. Similarly, Bae and Baxter (2018) found YouTube as a tool that assisted with providing tutoring lessons in online courses: not only did YouTube improve the comprehension of students in their study but they also served in increasing students' motivation levels. Findings from recent scholars support the current findings through their expositions on the value created through teachers' use of YouTube videos which had the potential of bringing effectiveness to the learning process (Srinivasachalu, 2020)

The second prominent category of usage and beliefs in Abedi et al.'s (2023) ICT Pedagogical Beliefs Classification Framework, which is focused on developing students' skills, indicates that teachers use technology because they believe it can effectively contribute to the development of students' technological skills. This did not however reflect in the findings. Rather, teachers relied on YouTube to develop their competencies and professional skills in teaching. Narratives from teachers showed that teachers used YouTube videos from other teachers' sites across the globe, accessed curriculum from different parts of the world and improved their teaching concepts and styles. This resonates with past claims in the Van Brack, Toneur and Valcke (2004) framework: the use of technology by teachers stemmed from their belief in its potential to facilitate change and innovation and improve their teaching practice by enabling them shift from teacher centred modes to student-centred methods. This is further captured in DETA (2001)'s framework which posits that teachers use technology such as YouTube as an integral part of reforms that will change the landscape of teaching and learning.

Findings from the study also corroborate those of Copper and Semic (2019) who analysed the professional development opportunity of using the YouTube video-sharing tool as a training modality. Results from their studies indicated that the YouTube training tool was a quality tool to assist teachers in the implementation of higher order teaching strategies and for transitioning from the traditional classroom. Similarly, Zavyalova and Galvin (2022) suggest that when teachers engage with the practice of using videos in teaching, they build new skills that can be invaluable in their rapidly changing professional context and also gain confidence and develop in pedagogical strength. Findings are further buttressed by Carpenter et al. (2020) and Nochumson (2020), who argue that teachers' confidence was enhanced by integrating social media tools such as YouTube in subject teaching.

The findings of the current study provided evidence regarding teachers using technology to transform or facilitate new learning methods. According to Abedi et al.'s (2023) ICT Pedagogical Beliefs Classification framework, teachers' motivation and belief for using technology in teaching can be traced to its potential to inform their teaching methods and lead to innovative ways of engaging in their practice. Findings from this study showed that teachers adopted new styles and forms of delivering lessons through the use of YouTube. Videos secured from various teaching sites provided additional ways and methods of problem solving. This category of usage can also be identified in Prestridge and De Aldama (2016) Classification Framework for Technology Enabled Practice (Frame TEP) where the third arm of classification is centred on teachers using technology to facilitate new ways of teaching and learning. Interestingly, findings from literature provide ample evidence on the potential ways in which students learning is enhanced (Casto Alonso et al., 2015; De koning et al., 2019; Henderson et al., 2015; Zhou et al., 2020), but are quite silent on how YouTube facilitates new and diversified methods of teaching. This provides impetus for delving further into teachers' usage of YouTube as a means of facilitating new learning.

Abedi et al. (2023) however argue that teachers' use of technology to improve the nature of lessons and to supplement curriculum are indicative of teacher centred and conventional beliefs. Teachers who use technology in this way view technology as tool for enhancing teaching and other practices without changing their teaching or the learning contexts. On the other hand, teachers who use technology to enrichen the existing curriculum and for transforming or facilitating new ways of teaching are viewed as moving towards constructivist and student centred methods. Literature shows that teachers who hold traditional, teacher-centred beliefs and orientations typically use technology in a fundamental manner merely to support existing curriculum practices. These practices include tasks such as lesson preparation and content delivery. Okojie et al. (2006) argued that such traditional beliefs about technology tend to be limited. They claimed that these beliefs often confine integration to specific technologies employed as supplements to traditional teaching practices. These arguments may be debatable as teachers in this study not only used YouTube for preparing and aiding lessons but also explored other dimensions that allowed them to alter their teaching styles through new competences gained. Nonetheless, the essence of teachers integrating technology in teaching is to promote creative and constructive ways of teaching and to move towards active ways of teaching that would engage students meaningfully.

Conclusion

This study investigated teachers' usage of YouTube among basic school teachers. Four dominant ways of usage were identified. YouTube was used as a teaching tool, as a means of enhancing specific topics, as a means of learning new and varied ways of teaching, and as a means of developing teachers' professional competence. According to ICT frameworks on pedagogical beliefs and use of technology, the use of YouTube as a means of gaining new ways of teaching and developing teachers' professional competencies aligns with constructivist methods of teaching. These suggest that when teachers engage rightly with technology, they build new skills that can be vital to their profession and develop their pedagogical strength. We argue that for teachers to enact meaningful pedagogies with technology through a more student-centred model, their knowledge and skills need to be developed alongside the reshaping of their motives and reasons and subsequently the ways in which they use technology for teaching.

We make a case that it is necessary for experts, such as educational strategists, policy holders and other stakeholders in the Ghanaian educational system to build on these strengths and to improve teachers' understanding of the roles being played in the adoption and use of technology such as YouTube videos and the future role it can play in authentic teaching and learning. This study recommends that teachers be open to technological knowledge and approaches to integrating new technologies from a wider perspective. We also recommend the design planning and reinforcement of innovative instructional design and technological integration through informed policy for the benefits of student learning and to enable teachers fully take on the new culture of teaching net generation students in various school contexts.

This approach is significant for teachers to move beyond using technology for demonstration, content delivery, and convenience purposes alone. The study makes a case for reorienting teachers towards accepting constructive and creative teaching which involves the use of new technologies such as YouTube to develop students' competencies for solving problems in the 21st century world.

The current study has made significant contributions to literature by highlighting the ways in which teachers in basic schools in Ghana make use of technological tools such as YouTube. Whilst the study identified four usage patterns, researchers could build on these findings by broadening the scope of research to include the collection of quantitative data from both public and private schools

to enable effective comparison and generalization of findings. The study drew on self-reported narratives from the perspectives of teachers; further studies could observe actual usage behaviour in an active classroom and draw on dual(mixed) methods of enquiry.

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ORCID iDs

Ama Otwiwah Adu-Marfo https://orcid.org/0000-0002-9974-4231
Olivia Adwoa Tiwaah Frimpong Kwapong https://orcid.org/0000-0002-7988-5782

Data availability statement

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

References

Abedi EA, Prestridge S and Hodge S (2023) Teachers' beliefs about technology integration in Ghana: a qualitative study of teachers', headteachers' and education officials' perceptions. *Education and Information Technologies* 1–21. DOI: 10.1007/s10639-023-12049-0

Agbofa FJK, Mensah DKD, Opoku-Amankwaah K, et al. (2023) Teachers' concerns on the implementation of the standards-based curriculum in Ghana: a case of new juaben north municipal. *Creative Education* 14(5): 1076–1093.

Downes T, Fluck A, Gibbons P, et al. (2001) *Making better connections: Models of teacher professional development for the integration of information and communication technology into classroom practice*. *Australian Curriculum Studies Association*.

Dzomeku BM, Amenyedzi FWK and Lartey MN (2011) The use of computers and internet as supplementary source of educational material: a case study of the senior high schools in the Tema metropolis in Ghana. *Contemporary Educational Technology* 2(2): 151–162.

Asante JN (2014) The state of ICT integration in the early years in Ghana schools. *Literacy Information and Computer Education Journal* 3(1): 1751–1757.

Asare-Donkoh F (2018) *Impact of Social Media on Ghanaian High School Students*. Lincoln, Nebraska, USA: Library Philosophy and Practice, 1–33.

Bae SS and Baxter S (2018) YouTube videos in the English language as a patient education resource for cataract surgery. *International Ophthalmology* 38: 1941–1945.

Baxter P and Jack S (2008) Qualitative case study methodology: study design and implementation for novice researchers. *Qualitative Report* 13(4): 544–559.

Berk RA (2009) Multimedia teaching with video clips: TV, movies, YouTube, and mtvU in the college classroom. *International Journal of Technology in Teaching & Learning* 5(1).

Bett H and Makewa L (2020) Can Facebook groups enhance continuing professional development of teachers? Lessons from Kenya. *Asia-Pacific Journal of Teacher Education* 48(2): 132–146.

Blonder R, Jonatan M, Bar-Dov Z, et al. (2013) Can YouTube it? Providing chemistry teachers with technological tools and enhancing their self-efficacy beliefs. *Chemistry Education: Research and Practice* 14: 269–285.

Braun V and Clarke V (2019) Reflecting on reflexive thematic analysis. *Qualitative research in sport, exercise and health* 11(4): 589–597.

Buabeng-Andoh C (2015) ICT usage in Ghanaian secondary schools: teachers' perspectives. *The International Journal of Information and Learning Technology* 32(5): 300–312.

Buabeng-Andoh C (2019) Factors that influence teachers' pedagogical use of ICT in secondary schools: a case of Ghana. *Contemporary educational technology* 10(3): 272–288.

Bullo M (2021) Integration of video lessons to Grade-9 science learners amidst COVID-19 pandemic. *International Journal of Research Studies in Education* 10(9): 67–75. DOI:10.5861/ijrse.2021.670

Buzzetto-More NA (2014) An examination of undergraduate student's perceptions and predilections of the use of YouTube in the teaching and learning process. *Interdisciplinary Journal of E-Learning and Learning Objects* 10(1): 17–32.

Carpenter JP, Krutka DG and Kimmons R (2020) Remote teaching and remote learning: educator tweeting during the COVID-19 pandemic. *Journal of Technology and Teacher Education* 28(2): 151–159.

Castro-Alonso JC, Ayres P and Paas F (2015) Animations showing lego manipulative tasks: three potential mod-erators of effectiveness. *Computers & Education* 85: 1–13. DOI: 10.1016/j.compedu.2014.12.02.

Craig CL and Freighs CG (2013) Video and HTML: testing online tutorial formats with biology Students. *Journal of Web Librarianship* 7(3): 293–304. DOI: 10.1080/19322909.2013.81.

Danso AKS and Kesseh FN (2016) Challenges undermining the teaching of ICT as a core subject in senior high schools in Ghana: a case study of selected schools in Kumasi Metropolis. *Journal of Information Engineering and Applications* 4(4): 1–7.

De Koning BB, Marcus N, Brucker B, et al. (2019) Does observing hand actions in animations and static graphics differentially affect learning of hand-manipulative tasks? *Computers & Education* 141: 103636. DOI: 10.1016/j.compedu.2019.103636.

Ertmer PA, Ottenbreit-Leftwich AT, Sadik O, et al. (2012) Teacher beliefs and technology integration practices: a critical relationship. *Computers & Education* 59(2): 423–435.

Fyfield M (2022) YouTube in the secondary classroom: how teachers use instructional videos in mainstream classrooms. *Technology, Pedagogy and Education* 31(2): 185–197.

Greenberg AD and Zanetis J (2012) *The impact of broadcast and streaming video in education: What the research says and how educators and decision makers can begin to prepare for the future*. *Cisco Systems & Wainhouse Research*. Available at: https://www.cisco.com/web/strategy/docs/education/ciscovideowp.pdf.

Henderson M, Selwyn N, Finger G, et al. (2015) Students' everyday engagement with digital technology in university: exploring patterns of use and 'usefulness. *Journal of Higher Education Policy and Management* 37(3): 308–319.

Ho DTK and Intai R (2017) Effectiveness of audio-visual aids in teaching lower secondary science in a rural secondary school. *Asia Pacific Journal of Educators and Education* 32: 91–106.

Jones NB and Graham C (2013) Practices and tools in online course delivery. *Learning Management Systems and Instructional Design: Best Practices in Online Education*. Pennsylvania, PA: IGI Global.

Kelly M, Lyng C, McGrath M, et al. (2009) A multi-method study to determine the effectiveness of, and student attitudes to, online instructional videos for teaching clinical nursing skills. *Nurse Education Today* 29: 292–300. DOI: 10.1016/j.nedt.2008.09.004.

Logan R (2012) Using YouTube in perioperative nursing education. *AORN Journal* 95(4): 474–481.

Manca S and Ranieri M (2016) "Yes for sharing, no for teaching!": social Media in academic practices. *The Internet and Higher Education* 29: 63–74.

Miller MV (2009) Integrating online multimedia into college course and classroom: with application to the social sciences. *Online Submission* 5(2): 395–423.

Ministry of Education, Ghana. (2015). *ICT in Education Policy*. https://planipolis.iep.unesco.org/sites/planipolis/files/resources/ghana_ict_in_education_policy_august_2015.pdf.

Moghavvemi S, Sulaiman A, Jaafar NI, et al. (2018) Social media as a complementary learning tool for teaching and learning: the case of YouTube. *International Journal of Management in Education* 16(1): 37–42. DOI: 10.1016/j.ijme.2017.12.001.

Muniyandy S, Lhuenyen NG, Yap C, et al. (2015) Influence of Youtube videos on the learning tablet-and-capsule-Foemulation by Malaysian pharmacy students: a pilot study. *Pharmacy Education* 15(1): 248–251.

Nochumson TC (2020) Elementary school teachers'use of Twitter: exploring the implications of learning through online social media. *Professional Development in Education* 46(2): 306–323.

Ogirima OA, Tolulope JJ and Temitope SJ (2021) Future teachers' perception towards use of YouTube for teaching-learning activities in Nigerian basic schools. *Mimbar Sekolar Dasar* 8(1): 81–95. DOI: 10.53400/mimbar-sd.v8i1.21378.

Okojie MC, Olinzock AA and Okojie-Boulder TC (2006) The pedagogy of technology integration. *Journal of Technology Studies* 32(2): 66–71.

Pattier D (2021) Teachers and YouTube: the use of video as an educational resource. *Ricerche di Pedagogia e Didattica. Journal of Theories and Research in Education* 16(1): 59–77.

Prestridge S (2012) The beliefs behind the teacher that influences their ICT practices. *Computers & education* 58(1): 449–458.

Prestridge S and de Aldama C (2016) A classification framework for exploring technology-enabled practice–FrameTEP. *Journal of Educational Computing Research* 54(7): 901–921.

Quansah JYD, Fiadzawoo JK and Kuunaangmen CK (2016) Students' engagement in social media and its mainstay for teaching and learning: the case of the Wa Nursing Training College. *American Journal of Educational Research* 4(13): 961–969.

Russell M, Bebell D, O'Dwyer L, et al. (2003) Examining teacher technology use: implications for preservice and inservice teacher preparation. *Journal of Teacher Education* 54(4): 297–310.

Srinivasacharlu A (2020) Using Youtube in colleges of education. *Shanlax International Journal of Education* 8(2): 21–24. DOI: 10.34293/education.v8i2.1736.

Tan E and Pearce N (2011) Open education videos in the classroom: exploring the opportunities and barriers to the use of YouTube in teaching introductory sociology. *Research in Learning Technology* 19(1): 7783. DOI: 10.3402/rlt.v19s1/7783.

Van Braak J, Tondeur J and Valcke M (2004) Explaining different types of computer use among primary school teachers. *European Journal of Psychology of Education* 19: 407–422.

Yin RK (2014) *Case Study Research: Design and Methods*. Los Angeles, CA: Sage.

Zavyalova K and Galvin C (2022) Teachers as media creators and prosumers: exploring the reasons & values behind their YouTube pedagogical activity. *Irish Educational Studies* 41(1): 187–200.

Zhou Q, Lee CS, Sin SCJ, et al. (2020) Understanding the use of YouTube as a learning resource: a social cognitive perspective. *Aslib Journal of Information Management* 72(3): 339–359.

Author Biographies

Ama Otwiwah Adu-Marfo is a Lecturer at the Department of Adult Education and Human Resource Studies at the University of Ghana. Her research interests include education and technology, scholarship of teaching and learning, lifelong learning and gender and development. She seeks to

contribute to knowledge building in these areas of interest through relevant studies that provide research leadership in Ghanaian indigenous knowledge development.

Olivia Adwoa Tiwaah Frimpong Kwapong is Associate Professor of Adult Education and currently Dean of the School of Continuing and Distance Education of the University of Ghana. She holds a PhD from the University of Ghana and has studied as a Special Doctoral Candidate at Harvard University. In 2013, she served as Fulbright Visiting Scholar at Bloomsburg University in the USA. She has taught at both undergraduate and postgraduate levels and has supervised over 60 masters and doctoral students. She has authored 5 books and over 40 journal articles.

Yaw Oheneba-Sakyi is a distinguished Sociology Professor and Fulbright New Century Scholar at the University of Ghana. He is the founding dean, School of Continuing and Distance Education and heads the Teaching Excellence Unit, Centre for Teaching and Learning Innovation. His prior experience includes two decades at State University of New York and California State University. His scholarly works have been published in various high-impact international journals across multiple disciplines.

Janice Miller-Young is a Professor in Mechanical Engineering. She has served as the Director of Mount Royal University's Institute for Scholarship of Teaching and Learning (now Mokakiiks Centre for SoTL), and the Academic Director of the University of Alberta's Centre for Teaching and Learning. Her research is pedagogical in focus, most recently focusing on educational development and Scholarship of Teaching and Learning in both multidisciplinary and engineering contexts.