



RESEARCH PAPER

A Theoretical Journey from Social Constructivism to Digital Storytelling

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Abstract

Using the concept of a journey through time, this article examines the theoretical foundation underpinning the use of digital storytelling as a pedagogical tool in the language classroom. It describes the arguments developed by Dewey, Piaget and Vygotsky, which form the basis of social constructivist theory and the work of Kolb from which experiential learning theory was developed. It goes on to describe how these theories are reflected in pedagogical approaches to language learning, from Asher's total physical response approach, to Blaine Ray's TPR storytelling and finally to the development of digital storytelling by Lambert and Atchley. Along this journey, the reader is able to pause and consider progressive theories of education and to take account of cognitive development and sociocultural theory. The significance of experience in the learning process and the value of a physical response becomes evident and the benefits of telling stories, whether these are told in the traditional way or through the use of digital technology is apparent.

Keywords

digital storytelling; social constructivism; experiential learning theory; total physical response; TPR storytelling

1. Introduction

Digital storytelling has been described by Robin (2006) as an effective instructional tool for teachers and an effective learning tool for students. But from what did this effective instructional tool evolve, why is it an effective learning tool? To answer these questions, we need to consider the theoretical journey leading towards digital storytelling. What follows is a description of that journey, from social constructivist and experiential learning theories, the total physical response approach, the development of TPR Storytelling, which all lead incrementally towards the use of digital storytelling as a pedagogical tool.

2. Social constructivism

Social constructivist theory argues that learning and understanding are inherently social and that, rather than knowledge being rooted in the individual, it is through cultural activities and the use of what Vygotsky describes as “tools of intellectual adaptation” (memories, mnemonics and mind-maps) that the individual acquires knowledge. These tools, which vary between cultures, include symbols (such as a child using a banana as a phone while playing), artefacts and language and through their use “thought, learning, and knowledge are not just influenced by social factors but are social phenomena” and “cognition is a collaborative process” (Palincsar, 1998, p. 349).

The constructivist movement was heralded by John Dewey, who argued that schools encouraged docile compliance by requiring students to master a set of facts and that in doing so they cultivated passivity rather than developing their students as reflective, autonomous and ethical beings (Talebi, 2015). For Dewey therefore, education and learning are socially interactive processes and acquiring a set of pre-determined skills is not the purpose of education. Dewey advocated for teachers to adopt a particular approach in the classroom arguing that “... for education to be most effective, content must be presented in a way that allows the student to relate the information to prior experiences, thus deepening the connection with this new knowledge” (Talebi, 2015, p. 5). In line with this approach the teacher should act as a facilitator rather than a mentor, allowing the child’s interest to coalesce around a particular topic,

In Piaget’s model of cognitive development, children are seen as having an active and constructive nature. In this assimilation-accommodation model a child’s cognitive structures dictate what the child notices (accommodates) in their environment and how they assimilate (interpret) what they notice (accommodate). In this way the child manufactures his or her own development (Flavell, 1996). For Piaget, although a child’s curiosity might be influenced by social factors, the system of assimilation and accommodation is something we have evolved to do, it is a form of biological adaptation, and, as a result our cognitive behaviour is intrinsically rather than extrinsically motivated.

Unlike Piaget, whose theory of cognitive development was rooted in processes that occur within an individual, Vygotsky argued that cognitive development resulted from exposure to external factors. For Vygotsky (1978, p. 40), it is social interaction that is pivotal, with development predicated by learning. This means that, unlike other theorists of his time, Vygotsky saw learning and development as having a dynamic and complex relationship, that an interdependence existed between them. To explain that interdependence he developed the concepts of the zone of proximal development and the more knowledgeable other.

An important feature of this view of cognitive development is that the individual (child) cannot acquire what they do not know independently: they need the guidance and encouragement of a “more knowledgeable other” acting as a facilitator who may be an adult but who may equally be another child whose cognitive development is more advanced (a “more capable peer”) and with whom the individual (child) collaborates.

Constructivism therefore is a synthesis of multiple theories diffused into one form, the works of Dewey, Piaget and Vygotsky contributing to its foundations and, within this one

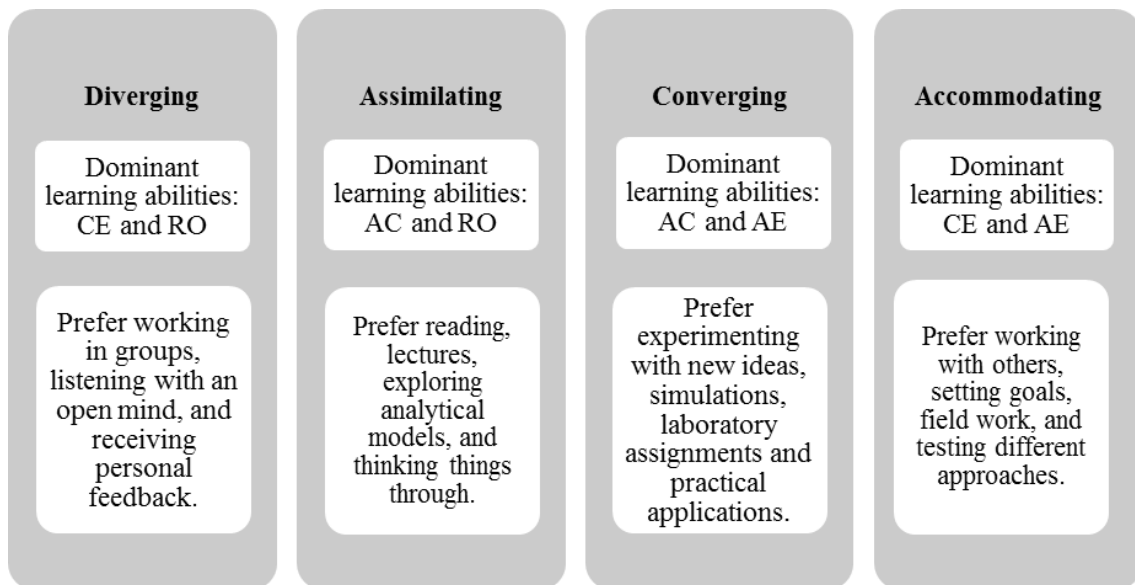
form two perspectives exist, one constructivist based on the work of Piaget and one socio-cultural based on that of Vygotsky. We have seen how constructivist thinking has had a profound impact upon the way in which we think of cognitive development; it has also had a profound effect upon education. Watson (2001) refers to the work of B. Brown & Shorrock (1998) who argued that "... the use of a constructivist framework which views the learner within a position of power and embraces all dimensions of teaching-learning would allow educators to articulate meaningfully the ways in which they might provide for children's educational rights." (quoted in Watson, 2001, p. 140).

3. Experiential learning theory

From the argument that cognition is a collaborative process, it is but a short step to the perspective brought by the theory of experiential learning, which, as its name suggests emphasizes the significance of experience in the learning process. Describing it as an holistic integrative perspective on learning that combines experience, perception, cognition and behaviour, Kolb identifies two reasons for using the term "experiential": the first to demonstrate that the intellectual origins of his theory lie in the philosophical pragmatism of Dewey, the social psychology of Lewin and the cognitive developmental psychology of Piaget, and secondly to "emphasize the central role that experience has in the learning process", learning being "...the process whereby knowledge is created through the transformation of experience" (Kolb, 1984).

The development of experiential learning theory is associated with a consideration of learning styles, with Kolb developing the Learning Styles Inventory which identified four prevalent learning styles (McCarthy, 2010) as illustrated in Figure 1:

Figure 1. Kolb's four prevalent learning styles



Since 1971, a considerable volume of research has been conducted into experiential learning theory, also referred to as "learning by doing" or "interactive learning".

This research identifies a number of benefits brought by an experiential learning approach, largely because learners must be actively involved in the learning process, they are active participants not merely passive acquirers of knowledge.

Whilst there are critics, it remains the case that the development of the learning styles inventory and experiential learning theory has been one of the most significant developments in the twentieth century, shaping the way in which we think about education and learning. Educators have come to appreciate the existence of different learning styles and recognise the need to modify teaching plans and materials accordingly and, most significantly learners are recognised as active participants not merely passive

observers, echoing the statement "Tell me and I will forget; show me and I may remember; involve me and I will understand." (Attributed to Confucius.)

4. The Total Physical Response approach

If cognition is the result of a collaborative process as per social constructivist theory, and effective learning is linked to doing in the spirit of experiential learning theory, the effectiveness of the learning strategy described by Asher (1964) as a total physical response approach becomes evident.

Using the total physical response approach language is taught through a process of teacher command, using imperatives to manipulate student behaviour followed by a physical response on the part of the student on the basis that body movement supports the development of understanding. Asher argued that even the objective of achieving listening and speaking fluency might be unachievable in the time available and that, consequently a focus on only one of the four language skills was essential. In his view the skill of listening comprehension had the highest positive transfer to other skills, in particular to speaking, and that, accordingly the first stage of language learning should be focussed only on listening (Asher, 1964), in much the same way as children learn their first language. In his view, when learning a second, foreign language high school students should spend at least six months focussing entirely on listening skills. When (this) level of comprehension is achieved the student may be ready for the graceful transition to speaking (a foreign language)" (Asher, 1969, p.4). Asher demonstrated the effectiveness of the approach in a series of experiments with students learning Russian and Japanese (the majority of these being college students). He found that the total physical response approach produced a highly significant acceleration in comprehension regardless of the complexity or novelty of the language being taught and that the approach was as effective with adults as with children, contradicting the generally held view that children are more able than adults to acquire a second language.

5. TPR Storytelling

Whilst the effectiveness of the total physical approach is well established (Asher, 1966), it does have limitations. Marsh (1998) identifies three principal limitations in classrooms where a total physical response is the sole approach utilised:

1. the focus on the imperative excludes other sentence forms;
2. passive language skills, listening and reading are fostered rather than the productive skills of speaking and writing; and
3. it uses single item vocabulary or short phrases.

These limitations have led to the development of what is termed TPR Storytelling, developed during the 1990's by Blaine Ray, a teacher of Spanish. TPR Storytelling is a blend of Asher's total physical response approach, the language acquisition theory developed by Krashen and what has been described as the natural approach to language learning developed by Terrell.

For Krashen (1987), the principal function of language is to communicate, communication being what language was designed for and in developing his language acquisition theory he draws a distinction between language acquisition and language learning. This distinction has been recognised by many researchers, including Terrell, who in the 1970s was responsible for what is referred to as the Natural Approach to language teaching (Terrell, 1982) and with whom Krashen subsequently collaborated.

According to Krashen the Input or Comprehension Hypothesis is fundamental to second language acquisition since for a learner to acquire a second language they must receive comprehensible input in situations where their affective filters are sufficiently low (Krashen, 2008). Factors such as anxiety, low motivation and a lack of self-confidence can serve to heighten the affective filter and by doing so obstruct comprehension and impede language acquisition.

Asher's total physical response, Krashen's language acquisition theory and Terrell's natural approach method all serve to underpin the approach of TPR Storytelling.

TPR Storytelling then, is a blend of these three elements: Krashen's language acquisition theory and the approaches developed by Asher and Terrell and, whilst as a method it has perhaps not been the most fashionable, it remains an "appealing", "suitable" and "powerful" alternative for foreign language teachers (Nunpaque & Rojas, 2010).

Looking first at how it can be used. Its creator, Blaine Ray having hit what has been described as the "TPR Wall" found that by telling stories, using the third person singular rather than commands he was able to move his students from the use of the imperative towards narrative and descriptive modes of speech and that if he involved the students in the storytelling process by getting them to enact the story he was able to retain the benefits that the total physical approach had brought to his classroom (Rowan, n.d.).

Lichtman (2015) conducted a review of research that had been undertaken with regard to the use of TPR Storytelling, reporting that there had been an explosion of studies in the previous five years, before concluding "The research is in: TPRS (TPR Storytelling) is effective. Her review, published as Annex C in the book *Fluency Through TPR Storytelling* (Ray & Seely, 2019), examined research in the following categories:

1. Empirical studies comparing TPRS to another teaching method.
2. Empirical studies on TPRS without a control group, which can provide evidence that TPRS is effective but not that it is more effective than another method.

She also looked at what she described as "descriptive pieces", four descriptive theses and dissertations.

She found:

1. The sixteen comparative studies all supported the use of TPRS: ten showing advantages for TPRS over another teaching method, and six showing mixed results (that is TPRS students equalled traditional students or performed better in some areas and worse in others).
2. In the majority of the research TPRS students outperformed traditional students on some measures of language skills.

On this evidence it would not be unreasonable to concur with the assertion made by Nunpaque & Rojas (2010) that TPR Storytelling is "powerful".

Turning to its appeal and its suitability for language teaching, this was set out by Nunpaque & Rojas (2010) when reporting on an on-going research project in Colombia. In their view TPR Storytelling is:

- entertaining and a low-stress way of acquiring a foreign language;
- fun and the use of humour promotes better long-term memory;
- centred on the learners' lives and as a result they are more likely to be interested in the content; and
- meaningful for the learners because it expresses things about real life situations.

Additionally, TPR Storytelling:

- uses simple stories that are easy to remember;
- creates a positive attitude towards the target language; and
- helps to create an "ear for what is right".

6. Digital Storytelling

Research has demonstrated an array of benefits associated with the use of digital storytelling as a pedagogical tool. Included amongst these benefits are (Di Blas, Garzotto, Paolini, & Sabiescu, 2009; Lisenbee & Ford, 2018; Yuksel, Robin, & Mcneil, 2010):

- the acquisition and consolidation of knowledge and skills
- heightened engagement and motivation towards learning activities
- the acquisition of digital literacy skills
- improvements in overall academic performance
- the development of writing, technical, presentation and research skills
- advancements in higher order thinking, social, language, reflection and artistic skills
- the opportunity for students to make authentic connections between their own experiences and the academic content of their lessons

From an historical perspective the Center for Digital Storytelling, now known as StoryCenter (<https://www.storycenter.org>), established by Joe Lambert and Dana Atchley in California during the early 1990s is recognised as the birthplace of the genre. With roots in an arts movement which understood that creativity is a human activity and not the sole preserve of the professional artist, that recognised the power and efficacy of digital technology and saw its transformational potential, digital storytelling as conceived by Lambert and Atchley has been utilised across a diverse spectrum. We have seen it used as a tool to give a voice to people to tell stories about identity, family, relationships, community, health, healing, place, the environment, about work, social justice and human rights (see these stories at <https://www.storycenter.org/stories/>). Subsequently much work has been done by researchers including those based at the University of Houston where a website dedicated to the educational uses of digital storytelling is maintained (<http://digitalstorytelling.coe.uh.edu/>). This body of work (B. R. Robin, 2016) has established that digital storytelling can be particularised by features including:

- A combination of "...the art of telling stories with a mixture of digital media, including text, pictures, recorded audio narration, music and video ... blended together using computer software, to tell a story that usually revolves around a specific theme or topic and often contains a particular point of view.
- "...digital stories (that) are relatively, short with a length of between 2 and 10 minutes ... saved in a digital format that can be viewed on a computer or other device capable of playing video files".
- "...typically uploaded to the internet where they may be viewed through any popular web browser".

It has also been increasingly recognised as a powerful pedagogical tool in education. Described by Robin (2006) as an effective instructional tool for teachers, an effective learning tool for students, it is also seen as supporting the development of what has been described as "twenty-first century literacy", specifically Digital Literacy, Global Literacy, Technology Literacy, Visual Literacy and Information Literacy (J. Brown, Bryan, & Brown, 2005).

So, from these beginnings we see today a "wide variety of digital storytelling forms that range from the personal to the educational, touching on professional and interactive entertainment. Some digital stories are video-based; others are based on photos and still others on cartoons and have varying duration. Some are written; others are spoken, while some incorporate multiple media formats". (Ribeiro, 2015). In education, it has been used to engage and motivate students (AlKhayat, 2010; Campbell, 2012) and to support teaching and learning in both skills-based and knowledge-based subjects including critical thinking (Yang & Wu, 2012), digital literacy (Pardo, 2014), physics (Kotluk & Kocakaya, 2017) and maths (Istemic Starčić, Cotic, Solomonides, & Volk, 2016). Researchers have also demonstrated its effectiveness in the language classroom (for example: Kim, 2014; Shelby-Caffey, Úbėda and Jenkins, 2014; Thang, Mahmud and Tng, 2015; Nishioka, 2016; Leshchenko, Ruban and Tymchuk, 2017).

Having looked at the benefits of digital storytelling, its history, the forms it can take and the process of developing a digital story we can now turn to the tools used to tell that story. There are numerous and diverse tools available for the creation of digital stories and the merits of those tools, both technical and pedagogical are an important consideration for anyone seeking to make use of digital storytelling in the classroom. In recognition of this, several evaluation models have been developed (Mateas, 2000; Murray, 1997; Schäfer, 2004; Spierling, Grasbon, Braunido, & Iurgel, 2002). In the main these have focussed on technological issues, however, a model that focusses on the pedagogical issues in the design of educational digital storytelling environments (the digital tools used to tell the story) has been developed (Psomos and Kordaki, 2012). Described as a “DS Pedagogical Evaluation Star” and based on the social constructivist approach to learning as discussed above, this model has sixteen pedagogical dimensions and is illustrated in Table 1.

Table 1. Pedagogical dimensions

<i>Collaborative Learning</i>	Does the tool provide opportunities for the collaborative creation of digital stories, collaborative learning being an underpinning feature of constructivist learning theory?
<i>Creativity and Innovation</i>	To what extent does the tool help students to create something new that has some kind of value?
<i>Multiple Representations</i>	Is the student able to select from a diverse range including text, pictures, video and voice as this can support complementary cognitive processes?
<i>Motivation</i>	To what extent will the tool motivate the student to engage in the activity, will it provide personal enjoyment, interest, or pleasure, is there an opportunity for the student to be rewarded?
<i>Cultural Sensitivity</i>	To what extent is the tool capable of providing a culturally sensitive learning environment, cultural sensitivity being an important pedagogical consideration?
<i>Gender Equality</i>	Does the tool promote gender equality, equality requiring that equitable outcomes should be available to all students, whatever their background?
<i>Cognitive Effort</i>	How much cognitive effort does the tool require from the student, cognitive effort being key to the pedagogical success of technologically based tools?
<i>Feedback</i>	Is the tool capable of providing the student with feedback since feedback can inform and motivate the student thereby increasing effort and attention?

<i>Learner Control</i>	To what degree does the tool allow the user to modify or influence the flow and outcome of the story, learner control playing an important role in the effectiveness of the learning experience?
<i>Flexibility</i>	How adaptable is the tool, a tool that takes individual preferences into account being an important pedagogical factor?
<i>Learner Activity</i>	To what degree does the tool enable the student to take an active role in their own learning and allow the teacher to change their role from a traditional didactic one to that of a facilitator, the active participation of the student in their own learning being a significant contributor to effective learning?
<i>Value of Prior Knowledge</i>	Does the tool take prior knowledge into account, constructivist learning theory attaching value to prior knowledge and experience?
<i>Sharply-Focused Goal Orientation</i>	Does the tool allow for learning goals to be clearly defined and to what degree does it allow those goals to be defined by the student, constructivist learning theory arguing that goals should originate, as far as possible with the learner?
<i>Experiential Value</i>	To what degree does the tool allow for reflection on direct experiences to change learning results?
<i>Knowledge Organisation</i>	Does the tool promote conceptual development? Learning can be facilitated in computer-based education by utilising concept maps as a form of organising knowledge, building new knowledge from existing knowledge.
<i>Metacognition</i>	To what extent does the tool enhance metacognitive skills? The degree to which a student understands and controls their own intellectual resources can be an important factor in computer-based learning environments.

This model provides a comprehensive evaluation of the pedagogical merits of digital storytelling tools and that, if implemented, is capable of supporting the lesson planning of teachers seeking to gain the full range of benefits from the use of digital storytelling in their classrooms.

7. Conclusion

This journey from social constructivism to digital storytelling has taken us through the landscape of the latter part of the 19th and into the 20th century before reaching our destination in the digital age. Our journey has allowed us to pause and consider progressive theories of education, to take account of cognitive development and sociocultural theory. We have seen the significance of experience in the learning process and the value of a physical response and, finally, we have witnessed the benefits of telling stories, whether these are told in the traditional way or through the use of digital technology.

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