HSR (LONDON),
HOUGHTON STREET REVIEW JOURNAL
ISSN: 2058-5519|Impact factor-15.9
http://houghtonstreetreview.com/index.php/hsr

Digital Storytelling as an Explanatory Practice in Primary STEAM Education

Toshpulatova Niyoxon Shavkatjon qizi
Associate Professor, PhD in Pedagogical Sciences
Termez University of Economics and Service, Uzbekistan
doi:https://doi.org/10.5281/zenodo.24056745

Abstract: Digital storytelling can connect artistic expression with the explanation of a scientific or technological idea, yet production quality can conceal weak content understanding. This conceptual article develops an instructional model that links a claim, a storyboard, multimodal representation and audience-informed revision. Digital-storytelling scholarship, creative-programming resources and accessibility guidance inform a worked design in which primary pupils explain a simple water-saving mechanism. The analysis distinguishes evidence-bearing representations from decorative additions and separates scientific accuracy, narrative clarity, accessibility and responsible use of media. Proposed classroom tasks and an analytical matrix show how individual understanding may be examined alongside a collaborative artefact. The study reports no classroom implementation or learning gains. Its contribution is a bounded design framework for using digital stories to teach and explain aspects of the digital world through STEAM. Validation requires investigation of comprehension, authorship and transfer across varied classroom conditions.

Keywords: digital storytelling; primary STEAM; multimodal explanation; creative learning; accessibility; media authorship.

1 Introduction

A digital story may be engaging without explaining its subject accurately. Sound, movement and images can support meaning, but they can also distract attention from a weak causal account. In primary STEAM education, the central design question is therefore not whether pupils can assemble media, but whether the media choices help an audience understand an idea.

Robin discusses digital storytelling as a classroom technology approach [1]. Creative-programming resources likewise provide opportunities to make personally meaningful projects [2]. The present article develops a narrower instructional use: an explanatory story in which a pupil shows what happens, why it happens and how a representation helps communicate that relationship. The proposal does not claim that storytelling necessarily improves scientific understanding.

The research question is how a primary digital-story project can integrate artistic authorship with an accountable explanation of a simple mechanism. The intended contribution is an author-generated design and evidence matrix. The model is distinct from a general digital literacy assessment because its central object is the explanatory relationship between content, narrative and media.

HSR (LONDON),
HOUGHTON STREET REVIEW JOURNAL
ISSN: 2058-5519|Impact factor-15.9
http://houghtonstreetreview.com/index.php/hsr

2 Materials and methods

The conceptual sources are Robin's digital-storytelling article [1], the Scratch Foundation's introductory learning resources [2], CAST's named 2024 UDL Guidelines version 3.0 [3], and UNICEF's scoping paper on children's digital literacy [4]. They were selected to inform storytelling, creative production, accessibility and age-appropriate interpretation of competence. The selection is purposive, not a systematic synthesis of intervention effects.

The design procedure identifies one explainable mechanism, describes the intended audience and constructs a storyboard with explicit evidential functions. Each media element is then checked against two questions: what meaning does it add, and could the audience access that meaning in another supported form? Finally, the design specifies how a teacher can examine individual understanding alongside a group product.

No participant work was collected. The sample project, storyboard structure and audience questions are hypothetical design outputs. No claim is made that the resulting matrix is a validated instrument. The article does not specify software functions that depend on an unverified current version; teachers should select an available tool that supports the required actions.

3 Results

3.1 An explanatory story problem

The proposed task asks pupils to explain how a simple tap-closing reminder can help prevent avoidable water flow in a classroom demonstration. The teacher controls the demonstration and checks the scientific claims. Pupils do not investigate a real household or collect personal consumption data. The explanation concerns the relation between a user action, the device state and water flow, with any relevant limitations stated.

A fictional character notices a problem, examines the mechanism and revises a response. The narrative gives the explanation a purpose, but it must not replace the mechanism with a slogan. For example, a statement that a character "saved water by being kind" describes an attitude but does not show what action changed the flow. Pupils should connect the message to an observable or modelled event.

The STEAM mapping follows the task. Scientific content concerns the demonstrated process. Engineering concerns the design of a reminder that addresses a user need. Technology concerns recording and organising media. Mathematics may concern sequence or an explicitly defined comparison. The arts concern composition, narrative viewpoint, voice and visual meaning. Teachers should omit disciplinary claims that the chosen version does not substantively address.

3.2 The claim-to-storyboard model

The first design product is a one-sentence claim expressed in language pupils can explain. The second is a short storyboard in which every scene has a function. The third is a media plan that identifies what images, words or sounds contribute. Only then do pupils produce the digital version.

HSR (LONDON),
HOUGHTON STREET REVIEW JOURNAL
ISSN: 2058-5519|Impact factor-15.9
http://houghtonstreetreview.com/index.php/hsr

This order seeks to make editing decisions inspectable rather than treating software operation as the whole lesson.

Table 1. Proposed storyboard functions

Scene function	Question for the author	Evidence to retain
Establish the problem	What does the audience need to understand?	A clear problem statement
Show the mechanism	What changes and what produces the change?	A labelled sequence
Explain a choice	Why was this response selected?	A reason linked to the mechanism
Show a limitation	When might the explanation need qualification?	A bounded claim
Revise the message	What did the audience misunderstand?	A justified change

A scene is not required to contain a large amount of text. A labelled drawing or brief narration can communicate a relationship more effectively than a long paragraph. However, reducing text must not remove the explanatory content. The teacher asks the pupil to state what the scene means and checks whether the artefact carries the same meaning for its intended audience.

3.3 Purposeful multimodality

The media plan separates an explanatory contribution from an aesthetic choice. An arrow can indicate direction, an ordered image sequence can represent change, and narration can clarify a connection that is not visually obvious. Music may establish mood, but it should not be credited as evidence of understanding a mechanism. Pupils can make aesthetic choices while explaining which elements carry the substantive claim.

Accessibility is considered during planning rather than after completion. CAST's guidance offers options concerning engagement, representation and action or expression [3]. In the proposed task, important meaning should not depend on colour or sound alone. A spoken explanation can have a concise text equivalent, and a visual distinction can include a label or shape. These are design recommendations, not a claim that every alternative format is interchangeable.

Table 2. Analytical dimensions for reviewing the story

Dimension	Review question	Common evidence problem
Content accuracy	Does the story represent the selected mechanism correctly?	A persuasive but inaccurate claim

HSR (LONDON),
HOUGHTON STREET REVIEW JOURNAL
ISSN: 2058-5519|Impact factor-15.9
http://houghtonstreetreview.com/index.php/hsr

Explanatory coherence	Can the audience follow the relationship between events?	Scenes connected only by chronology
Media purpose	Does each important element contribute to meaning?	Decoration mistaken for explanation
Accessibility	Can the intended audience access essential information?	Meaning conveyed by one unsupported mode
Responsible authorship	Are media origins and permissions handled appropriately?	Unattributed borrowed material

The dimensions are reviewed separately. A technically polished story may still need content revision, while a modestly produced story may explain the idea clearly. The matrix is a proposed review aid and should not be used as a standardised rating scale without further development.

3.4 Authorship and audience feedback

Pupils can create their own drawings or use teacher-provided materials with suitable permissions. The media plan records where each element came from. The purpose is to establish a habit of recognising authorship rather than require children to navigate complex legal terminology. Public posting is not necessary to complete the learning task, and identifiable images or voices require appropriate school procedures.

Audience review uses focused questions. A partner explains what they think the mechanism is, identifies one unclear point and suggests what further information would help. “I liked the pictures” is a valid reaction but not evidence that the explanation was understood. The author compares the partner’s account with the intended claim and chooses a revision for a stated reason.

Individual evidence remains important in collaborative production. Each pupil can explain one scene, describe a revision and respond to a changed example. If one child controls the device while others supply ideas, the final artefact does not show equal operational practice. Teachers should distinguish conceptual contribution, authorship decisions and software execution rather than infer all three from participation in a group.

4 Discussion

The proposed model treats digital storytelling as an explanatory practice rather than a presentation format alone. Its key mechanism is the repeated comparison between intended meaning, media representation and audience interpretation. The artistic contribution is integral because choices about sequence, viewpoint and emphasis can change what the audience understands. These choices need to remain accountable to content accuracy.

Robin’s article supports recognising storytelling as an educational technology practice [1], but it does not validate the specific storyboard or matrix developed here. The current framework needs direct investigation. A future study could compare pupils’ spoken explanations before and after

HSR (LONDON),
HOUGHTON STREET REVIEW JOURNAL
ISSN: 2058-5519|Impact factor-15.9
http://houghtonstreetreview.com/index.php/hsr

revision and examine whether the revised artefact communicates the same relationship to a new audience.

UNICEF's scoping paper highlights the need to consider children when interpreting digital literacy frameworks [4]. The implication drawn here is that responsible authorship should be taught through concrete classroom decisions. Selecting a permitted image and recording its origin is more age-appropriate than copying an adult policy statement without understanding its application.

Several limitations remain. Familiarity with the scientific topic may affect performance, and language proficiency may influence narrative clarity. An audience response can also reflect friendship or reluctance to criticise. Structured prompts and teacher moderation may help, but their effectiveness cannot be assumed. Studies should document both the content lesson and the production process rather than attribute every change to digital storytelling.

The project also requires realistic time allocation. Media editing can expand until it displaces explanation. Teachers can constrain the number of scenes or available effects while preserving meaningful choices. Such constraints are local pedagogical decisions; they should be revised if they prevent a pupil from communicating the essential idea accessibly.

5 Conclusion

Digital storytelling can be designed to integrate STEAM through a clear relationship between claim, storyboard, media choice and audience-informed revision. The proposed framework distinguishes attractive production from explanatory quality and makes accessibility and authorship part of the task. It remains a conceptual design requiring empirical study, rather than evidence that digital stories produce learning gains in every primary classroom.

References

1. Robin, B. R. (2008). Digital storytelling: A powerful technology tool for the 21st century classroom. Theory Into Practice, 47(3), 220–228. https://doi.org/10.1080/00405840802153916
2. Scratch Foundation. (n.d.). Getting started. https://scratchfoundation.org/learn/learning-library/getting-started
3. CAST. (2024). Universal Design for Learning Guidelines version 3.0. https://udlguidelines.cast.org/
4. Nascimbeni, F., & Vosloo, S. (2019). Digital literacy for children: Exploring definitions and frameworks. UNICEF. https://www.unicef.org/innocenti/reports/digital-literacy-children-exploring-definitions-and-frameworks