

Survey on factors which determine game mechanics selection, design and presentation during the design of effective educational games.

This survey purpose is to investigate educational game expert's perspective on how game elements are selected and presented to ensure adequate learning during the design of educational games. The distinction between procedural processes and creative processes during design are also explored. This survey is reserved for educational game experts to share their practice or knowledge on how they design an effective educational game.

* Indicates required question

Objectives of this Survey

1. To understand the state of the art in the design of effective educational games.
2. To study learning elements relevant to the game mechanics selection, design and presentation during design of effective educational games.
3. To identify which activities are procedural activities and which ones are subject to the creative power of the designer during the design of an effective educational game.

Participant Information

This section aims to capture the participant views based on their expertise in the subject and other valuable data for research purposes only. No personal data will be collected. Data such as contact information is only collected for follow up purposes and will not be disclosed or published along with the results of the study.

1. Participant's understanding of digital educational games *

Mark only one oval.

- ☐ Expert
- ☐ Knowledgeable
- ☐ Novice

2. Primary role of the participant *

Mark only one oval.

- ☐ Game designer
- ☐ Game researcher
- ☐ Game programmer
- ☐ Instructional designer
- ☐ Interaction designer

3. Experience *

Mark only one oval.

- ☐ 1-5 Years
- ☐ 6-10 Years
- ☐ 10+ Years

4. Country *

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Mark only one oval.

- ☐ Afghanistan
- ☐ Akrotiri
- ☐ Albania
- ☐ Algeria
- ☐ American Samoa
- ☐ Andorra
- ☐ Angola
- ☐ Anguilla
- ☐ Antarctica
- ☐ Antigua and Barbuda
- ☐ Argentina
- ☐ Armenia
- ☐ Aruba
- ☐ Ashmore and Cartier Islands

- ☐ Australia
- ☐ Austria
- ☐ Azerbaijan
- ☐ Bahamas, The
- ☐ Bahrain
- ☐ Bangladesh
- ☐ Barbados
- ☐ Bassas da India
- ☐ Belarus
- ☐ Belgium
- ☐ Belize
- ☐ Benin
- ☐ Bermuda
- ☐ Bhutan
- ☐ Bolivia
- ☐ Bosnia and Herzegovina
- ☐ Botswana
- ☐ Bouvet Island
- ☐ Brazil
- ☐ British Indian Ocean Territory
- ☐ British Virgin Islands
- ☐ Brunei
- ☐ Bulgaria
- ☐ Burkina Faso
- ☐ Burma
- ☐ Burundi
- ☐ Cambodia
- ☐ Cameroon
- ☐ Canada
- ☐ Cape Verde
- ☐ Cayman Islands
- ☐ Central African Republic
- ☐ Chad
- ☐ Chile

- ☐ China
- ☐ Christmas Island
- ☐ Clipperton Island
- ☐ Cocos (Keeling) Islands
- ☐ Colombia
- ☐ Comoros
- ☐ Congo, Democratic Republic of the
- ☐ Congo, Republic of the
- ☐ Cook Islands
- ☐ Coral Sea Islands
- ☐ Costa Rica
- ☐ Cote d'Ivoire
- ☐ Croatia
- ☐ Cuba
- ☐ Cyprus
- ☐ Czech Republic
- ☐ Denmark
- ☐ Dhekelia
- ☐ Djibouti
- ☐ Dominica
- ☐ Dominican Republic
- ☐ Ecuador
- ☐ Egypt
- ☐ El Salvador
- ☐ Equatorial Guinea
- ☐ Eritrea
- ☐ Estonia
- ☐ Ethiopia
- ☐ Europa Island
- ☐ Falkland Islands (Islas Malvinas)
- ☐ Faroe Islands
- ☐ Fiji
- ☐ Finland
- ☐ France

- ☐ French Guiana
- ☐ French Polynesia
- ☐ French Southern and Antarctic Lands
- ☐ Gabon
- ☐ Gambia, The
- ☐ Gaza Strip
- ☐ Georgia
- ☐ Germany
- ☐ Ghana
- ☐ Gibraltar
- ☐ Glorioso Islands
- ☐ Greece
- ☐ Greenland
- ☐ Grenada
- ☐ Guadeloupe
- ☐ Guam
- ☐ Guatemala
- ☐ Guernsey
- ☐ Guinea
- ☐ Guinea-Bissau
- ☐ Guyana
- ☐ Haiti
- ☐ Heard Island and McDonald Islands
- ☐ Holy See (Vatican City)
- ☐ Honduras
- ☐ Hong Kong
- ☐ Hungary
- ☐ Iceland
- ☐ India
- ☐ Indonesia
- ☐ Iran
- ☐ Iraq
- ☐ Ireland
- ☐ Isle of Man

- ☐ Israel
- ☐ Italy
- ☐ Jamaica
- ☐ Jan Mayen
- ☐ Japan
- ☐ Jersey
- ☐ Jordan
- ☐ Juan de Nova Island
- ☐ Kazakhstan
- ☐ Kenya
- ☐ Kiribati
- ☐ Korea, North
- ☐ Korea, South
- ☐ Kuwait
- ☐ Kyrgyzstan
- ☐ Laos
- ☐ Latvia
- ☐ Lebanon
- ☐ Lesotho
- ☐ Liberia
- ☐ Libya
- ☐ Liechtenstein
- ☐ Lithuania
- ☐ Luxembourg
- ☐ Macau
- ☐ Macedonia
- ☐ Madagascar
- ☐ Malawi
- ☐ Malaysia
- ☐ Maldives
- ☐ Mali
- ☐ Malta
- ☐ Marshall Islands
- ☐ Martinique

- ☐ Mauritania
- ☐ Mauritius
- ☐ Mayotte
- ☐ Mexico
- ☐ Micronesia, Federated States of
- ☐ Moldova
- ☐ Monaco
- ☐ Mongolia
- ☐ Montenegro
- ☐ Montserrat
- ☐ Morocco
- ☐ Mozambique
- ☐ Namibia
- ☐ Nauru
- ☐ Navassa Island
- ☐ Nepal
- ☐ Netherlands
- ☐ Netherlands Antilles
- ☐ New Caledonia
- ☐ New Zealand
- ☐ Nicaragua
- ☐ Niger
- ☐ Nigeria
- ☐ Niue
- ☐ Norfolk Island
- ☐ Northern Mariana Islands
- ☐ Norway
- ☐ Oman
- ☐ Pakistan
- ☐ Palau
- ☐ Panama
- ☐ Papua New Guinea
- ☐ Paracel Islands
- ☐ Paraguay

- ☐ Peru
- ☐ Philippines
- ☐ Pitcairn Islands
- ☐ Poland
- ☐ Portugal
- ☐ Puerto Rico
- ☐ Qatar
- ☐ Reunion
- ☐ Romania
- ☐ Russia
- ☐ Rwanda
- ☐ Saint Helena
- ☐ Saint Kitts and Nevis
- ☐ Saint Lucia
- ☐ Saint Pierre and Miquelon
- ☐ Saint Vincent and the Grenadines
- ☐ Samoa
- ☐ San Marino
- ☐ Sao Tome and Principe
- ☐ Saudi Arabia
- ☐ Senegal
- ☐ Serbia
- ☐ Seychelles
- ☐ Sierra Leone
- ☐ Singapore
- ☐ Slovakia
- ☐ Slovenia
- ☐ Solomon Islands
- ☐ Somalia
- ☐ South Africa
- ☐ South Georgia and the South Sandwich Islands
- ☐ Spain
- ☐ Spratly Islands
- ☐ Sri Lanka

- ☐ Sudan
- ☐ Suriname
- ☐ Svalbard
- ☐ Swaziland
- ☐ Sweden
- ☐ Switzerland
- ☐ Syria
- ☐ Taiwan
- ☐ Tajikistan
- ☐ Tanzania
- ☐ Thailand
- ☐ Timor-Leste
- ☐ Togo
- ☐ Tokelau
- ☐ Tonga
- ☐ Trinidad and Tobago
- ☐ Tromelin Island
- ☐ Tunisia
- ☐ Turkey
- ☐ Turkmenistan
- ☐ Turks and Caicos Islands
- ☐ Tuvalu
- ☐ Uganda
- ☐ Ukraine
- ☐ United Arab Emirates
- ☐ United Kingdom
- ☐ United States
- ☐ Uruguay
- ☐ Uzbekistan
- ☐ Vanuatu
- ☐ Venezuela
- ☐ Vietnam
- ☐ Virgin Islands
- ☐ Wake Island

- ☐ Wallis and Futuna
- ☐ West Bank
- ☐ Western Sahara
- ☐ Yemen
- ☐ Zambia
- ☐ Zimbabwe

Mechanics Selection

This section focuses on elements which define how learning mechanics match with some game mechanics. Each attribute can be matched based on your expertise and opinion on which mechanics are best suited for the corresponding learning element.

Learner and Mechanics Selection

Hypothesis: Learner attributes such as their personality, learning style, and preferences influence which game mechanics should be adopted to favour effective learning.

5. During educational game design, learner attributes such as the learner personality, learner's dominant learning style, and their game genre preferences influence the game mechanics to be adopted.

Mark only one oval.

- ☐ Strongly disagree
- ☐ Disagree
- ☐ Neutral
- ☐ Agree
- ☐ Strongly agree

6. How important are the following learner attributes to mechanics selection during the design of an effective educational game?

Mark only one oval per row.

	Unimportant	Slightly Important	Moderately Important	Important	Very Important
Learner's personality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Learner's game genre preferences	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Learner's dominant learning style	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Learner's demographic data (age, gender, culture, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

7. Match the following learner attributes based on where they are most applicable during the design of effective educational games.

Mark only one oval per row.

	Mechanics Selection	Mechanics Presentation	Both Selection and Presentation	None
Learner's personality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Learner's game genre preferences	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Learner's dominant learning style	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Learner's demography (age, gender, culture, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

8. How frequently do the following learners' attributes influence the gameplay design? *

Mark only one oval per row.

	Never	Rarely	Sometimes	Often	Alway
Learner's personality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Learner's game genre preferences	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Learner's dominant learning style	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Learner's demography (age, gender, culture, etc)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

9. How frequently do the following learners' attributes influence the game rewards design? *

Mark only one oval per row.

	Never	Rarely	Sometimes	Often	Always
Learner's personality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Learner's game genre preferences	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Learner's dominant learning style	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Learner's demography (age, gender, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

10. How frequently do the following learners' attributes influence the level progression design? *

Mark only one oval per row.

	Never	Rarely	Sometimes	Often	Always
Learner's personality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Learner's game genre preferences	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Learner's dominant learning style	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Learner's demography (age, gender etc)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

11. How frequently do the following learners' attributes influence the game environment and game asset design?

Mark only one oval per row.

	Never	Rarely	Sometimes	Often	Always
Learner's personality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Learner's game genre preferences	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Learner's dominant learning style	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Learner's demography (age, gender, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

12. How frequently do the following learners' attributes influence the game environment and game theme/type/genre selection?

Mark only one oval per row.

	Never	Rarely	Sometimes	Often	Always
Learner's personality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Leaner's game genre preferences	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Leaner's dominant learning style	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Leaner's demography (age, gender, etc)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

13. How frequently do the following learners' attributes influence the game story/narration design? *

Mark only one oval per row.

	Never	Rarely	Sometimes	Often	Always
Learner's personality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Learner's game genre preferences	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Learner's dominant learning style	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Learner's demography (age, gender, etc)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

14. Other comments on how player characteristics influence the game mechanics selection.

Mechanics Selection II

Learning design and game mechanics design

Hypothesis: An Instructional strategy is best implemented using some game mechanics.

15. During the design of effective educational games, learning elements such as learning theory and Bloom learning outcomes influence the selection of game mechanics.

Mark only one oval.

- ☐ Strongly Disagree
- ☐ Disagree
- ☐ Neutral
- ☐ Agree
- ☐ Strongly Agree

16. Indicate how important the following learning design elements are in the selection and design of effective educational game mechanics.

Mark only one oval per row.

	Unimportant	Slightly Important	Moderately Important	Important	Very Important
Learning theories	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Learning environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Learning outcomes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Learning objects	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

17. Match the following learning elements based on where they are most applicable during the design of effective educational games.

Mark only one oval per row.

	Mechanics Selection	Mechanics Presentation	Both Selection and Presentation	None
Learning theories	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Learning outcomes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Learning environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Learning objects	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

18. How frequently do learning theories influence the design of the following game mechanics? *

Mark only one oval per row.

	Never	Rarely	Sometimes	Often	Always
Gameplay (action and rules)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game rewards	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Level progression	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game levels	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game theme/type/genre	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game assets	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game story/narratives	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

19. How frequently do Bloom's learning outcomes taxonomy influence the design of the following game mechanics?

Mark only one oval per row.

	Never	Rarely	Sometimes	Often	Always
Gameplay (action and rules)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game rewards	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Level progression	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game levels	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game theme/type/genre	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game assets	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game story/narratives	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

20. How frequently do the learning objectives influence the design of the following game mechanics during the design of effective educational games?

Mark only one oval per row.

	Never	Rarely	Sometimes	Often	Always
Gameplay (action and rules)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game rewards	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Level progression	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game levels	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game theme/type/genre	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game assets	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game story/narratives	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

21. How frequently do the learning objects influence the design of the following game mechanics during the design of effective educational games?

Mark only one oval per row.

	Never	Rarely	Sometimes	Often	Always
Gameplay (actions and rules)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game rewards	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Level progression	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game levels	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game theme/type/genre	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game assets	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game story/narratives	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

22. Match the following learning theories based on where they are most applicable during the design of effective educational games.

Mark only one oval per row.

	Mechanics Selection	Mechanics Presentation	Both Selection and Presentation	None
Constructivism	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Behaviourism	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cognitivism	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Humanism	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Connectionism	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

23. How frequently does **constructivism** affect the design of the following game mechanics during the design of effective educational games?

Mark only one oval per row.

	Never	Rarely	Sometimes	Often	Always
Gameplay (action and rules)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game rewards	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game levels	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Environment and setting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game theme/type/genre	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game assets	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game story/narratives	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

24. How frequently does **behaviourism** affect the design of the following game mechanics during the design of effective educational games?

Mark only one oval per row.

	Never	Rarely	Sometimes	Often	Always
Gameplay (action and rules)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game rewards	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game levels	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Environment and Setting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game theme/type/genre	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game assets	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game story/narratives	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

25. How frequently does **cognitivism** affect the design of the following game mechanics during the design of effective educational games?

Mark only one oval per row.

	Never	Rarely	Sometimes	Often	Always
Gameplay (action and rules)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game rewards	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game levels	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Environment and setting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game theme/type/genre	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game assets	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game story/narratives	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

26. How frequently does **humanism** affect the design of the following game mechanics during the design of effective educational games?

Mark only one oval per row.

	Never	Rarely	Sometimes	Often	Always
Gameplay (action and rules)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game rewards	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game levels	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Environment and setting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game theme/type/genre	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game assets	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game story/narratives	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

27. How frequently does **connectionism** (social learning theory) affect the design of the following game mechanics during the design of effective educational games?

Mark only one oval per row.

	Never	Rarely	Sometimes	Often	Always
Gameplay (action and rules)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game rewards	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game levels	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Environment and setting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game theme/type/genre	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game assets	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game story/narratives	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

28. Any other comments on learning theory and game mechanics design?

Mechanics Selection III

Bloom's learning outcomes

Hypothesis: The Bloom's learning outcomes (remembering, understanding, applying, analysing, evaluating and creating) affect the mechanics design of an effective educational game.

29. How frequently does **remembering** affect the design of the following game mechanics during the design of effective educational games?

Mark only one oval per row.

	Never	Rarely	Sometimes	Often	Always
Gameplay (action and rules)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game rewards	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game levels	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Environment and setting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game theme/type/genre	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game assets	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game story/narratives	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

30. How frequently does **understanding** affect the design of the following game mechanics during the design of effective educational games?

Mark only one oval per row.

	Never	Rarely	Sometimes	Often	Always
Gameplay (action and rules)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game rewards	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game levels	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Environment and setting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game theme/type/genre	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game assets	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game story/narratives	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

31. How frequently does **applying** affect the design of the following game mechanics during the design of effective educational games?

Mark only one oval per row.

	Never	Rarely	Sometimes	Often	Always
Gameplay (action and rules)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game rewards	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game levels	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Environment and setting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game theme/type/genre	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game assets	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game story/narratives	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

32. How frequently does **analysing** affect the design of the following game mechanics during the design of effective educational games?

Mark only one oval per row.

	Never	Rarely	Sometimes	Often	Always
Gameplay (action and rules)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game rewards	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game levels	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Environment and setting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game theme/type/genre	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game assets	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game story/narratives	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

33. How frequently does **evaluating** affect the design of the following game mechanics during the design of effective educational games?

Mark only one oval per row.

	Never	Rarely	Sometimes	Often	Always
Gameplay (action and rules)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game rewards	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game levels	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Environment and setting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game theme/type/genre	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game assets	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game story/narratives	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

34. How frequently does **creating** affect the design of the following game mechanics during the design of effective educational games?

Mark only one oval per row.

	Never	Rarely	Sometimes	Often	Always
Gameplay (action and rules)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game rewards	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game levels	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Environment and setting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game theme/type/genre	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game assets	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game story/narratives	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

35. Any other comments on Bloom's learning outcomes effect on mechanics selection, design and presentation?

Mechanics Presentation

Hypothesis: How mechanics are presented affect learning in games.

Some learning design characteristics are important in defining mechanics presentation.

36. Which of the following mechanics presentation and organization attributes are relevant to effective learning in educational games.

Check all that apply.

- ☐ Game progression
- ☐ Level complexity
- ☐ Rate at which mechanics are presented
- ☐ Time it takes to complete one level (1 Objective)
- ☐ Time it takes to start game
- ☐ Number of levels in the game
- ☐ Number of activities in 1 level

37. How important is the role of linearity (ie. difficulty and game progression) in relation to effective learning during education game design?

Mark only one oval.

	1	2	3	4	5	
Not	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very important

38. How important is the role of time to be spent on playing 1 level in relation to effective learning during education game design?

Mark only one oval.

	1	2	3	4	5	
Not	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very important

39. How relevant is the mechanics' presentation in relation to effective learning? *

Mark only one oval per row.

	Not Important	Slightly Important	Moderately Important	Important	Very Importar
Game progression	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Level complexity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Rate of presenting and recombining mechanics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Time it takes to complete 1 level	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Number of levels in a game	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Asset and environment design	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game genre	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game story or narrative	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

40. How frequently does the target player's cognitive ability influence the design of the following game elements?

Mark only one oval per row.

	Never	Rarely	Sometimes	Often	Alway
Game progression	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Level complexity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Rate of presenting and recombining mechanics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Time it takes to complete 1 level	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Number of levels in a game	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Asset and environment design	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game genre	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game story or narrative	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

41. How frequently do the target player's learning styles influence the design of the following game elements?

Mark only one oval per row.

	Never	Rarely	Sometimes	Often	Alway
Game progression	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Level complexity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Rate of presenting and recombining mechanics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Time it takes to complete 1 level	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Number of levels in a game	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Asset and environment design	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game genre	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game story or narrative	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

42. How frequently do learning objectives influence the design of the following game elements? *

Mark only one oval per row.

	Never	Rarely	Sometimes	Often	Alway
Game progression	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Level complexity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Rate of presenting and recombining mechanics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Time it takes to complete 1 level	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Number of levels in a game	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Asset and environment design	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game genre	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game story or narrative	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

43. How frequently does learning outcomes influence the design of the following game elements? *

Mark only one oval per row.

	Never	Rarely	Sometimes	Often	Alway
Game progression	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Level complexity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Rate of presenting and recombining mechanics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Time it takes to complete 1 level	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Number of levels in a game	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Asset and environment design	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game genre	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game story or narrative	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

44. How frequently does learning assessment influence the design of the following game elements? *

Mark only one oval per row.

	Never	Rarely	Sometimes	Often	Alway
Game progression	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Level complexity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Rate of presenting and recombining mechanics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Time it takes to complete 1 level	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Number of levels in a game	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Asset and environment design	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game genre	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game story or narrative	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

45. How important is the role of level complexity in relation to effective learning during education game design?

Mark only one oval.

1 2 3 4 5

Not ☐ ☐ ☐ ☐ ☐ Very important

46. How important is the role of the rate at which mechanics are presented to the player in relation to effective learning during education game design?

Mark only one oval.

1 2 3 4 5

Not ☐ ☐ ☐ ☐ ☐ Very important

47. What is the recommended maximum number of activities (action, decision or event) in one level of a game for effective learning?

Mark only one oval.

[illegible]

48. What is the recommended minimum number of activities (action, decision or event) in one level of a game for effective learning?

Mark only one oval.

[illegible]

49. Any other comments on factors affecting mechanics presentation during the design of effective educational games?

Creative activities and procedural activities during educational game design

This section seeks to understand the practical design process by collecting expert opinion about which design choices are procedural as well as which ones are subject to the creativity of the designer.

50. Indicate whether the following activities are procedural or creative. *

Mark only one oval per row.

	Procedural activity	Creative activity	Both	Not sure
Matching learner attributes to game mechanics selection	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Matching subject to game mechanics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Decision on game genre	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Decision on game rules, interactions and Objects	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game Progression Design	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game Story or Narratives	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game Assets and Art	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

51. Any other comments on what aspects of educational game design are procedural and which ones are driven by the creative power of their designers.

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