## CHARACTER-IZING GAMEFUL LEARNING

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# BACKGROUND

## GAMIFICATION



Using game-based mechanics, aesthetics and game thinking to engage people, motivate action, promote learning, and solve problems (Kapp 2012)

## POTENTIAL PROTOCOLS

DESIGN PRINCIPLE	MECHANIC		SCOPE
Goals/challenges			
Personalization			
Rapid feedback			
Visible status		T -**	
Unlocking content			
Freedom of choice			
Freedom to fail			
Storyline/new identities			
Onboarding			
Time restriction		The Company and the State	
Social engagement			
(Dicheva <i>et al.</i> 2015)			

## **EXISTING PROTOCOLS**

DESIGN PRINCIPLE	MECHANIC	SCOPE
Goals/challenges	Frequent reward-yielding activities	Course
Personalization	Accrual grading, achievement levels	Course
Rapid feedback	Auto-grading of most activities	Course
Visible status		
Unlocking content		
Freedom of choice		
Freedom to fail	Option to repeat selected activities	Course
Storyline/new identities	Scope and sequencing	Course
Onboarding	Looser requirements for early units	Course
Time restriction	Timed/time limited activities	
Social engagement	Peer extra credit awards	Course
(Dicheva <i>et al.</i> 201 <u>5)</u>		





The Josianic Reform: Deuteronomy, Prophecy, and Israelite Religion

(a.k.a. "The Josiah Game")

Instructor's Manual Version 3.0 August 23, 2008

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### **EXPERIMENTAL PROTOCOLS**

DESIGN PRINCIPLE	MECHANIC	SCOPE
Goals/challenges	Frequent reward-yielding activities	Course
Personalization	Accrual grading, achievement levels	Course
Rapid feedback	Auto-grading of most activities	Course
Visible status		
Unlocking content	Content via interactive fiction	Assignment
Freedom of choice	Content via interactive fiction	Assignment
Freedom to fail	Option to repeat selected activities	Course
Storyline/new identities	Content via interactive fiction	Assignment
Onboarding	Looser requirements for early units	Course
Time restriction	Timed/time limited activities	
Social engagement	Peer extra credit awards	Course
(Dicheva <i>et al.</i> 201 <u>5)</u>		

## EXPERIMENT

## **EXISTING SEQUENCE**

	STAGEA	STAGE B	STAGEC
CYCLE 0	Declarative	Declarative	Declarative
CYCLE 1	Declarative	Declarative	Declarative
CYCLE 2	Declarative	Declarative	Declarative
CYCLE 3	Declarative	Declarative	Declarative
CYCLE 4	Declarative	Declarative	Declarative
CYCLE 5	Declarative	Declarative	Declarative
CYCLE 6	Declarative	Declarative	Declarative

### **EXPERIMENTAL SEQUENCE**

STAGE A

STAGE R

STAGE C

	JIAGEA	JIAGE D	JIAGE C
CYCLE 0	Declarative	Declarative	Declarative
CYCLE 1	Declarative	Narrative	Declarative
CYCLE 2	Declarative	Narrative	Declarative
CYCLE 3	Declarative	Narrative	Declarative
CYCLE 4	Declarative	Narrative	Declarative
CYCLE 5	Declarative	Narrative	Declarative
CYCLE 6	Declarative	Narrative	Declarative

As the two explorers emerge into the light of day ...

We've been raiding tombs for days, Larry, and ...

> I know, Deanna-still no sign of the LOST ARK!

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A Worlds of Biblecraft Adventure		
	Characters in the story will call you Chris	
by Christopher Heard		
Assoc. Prof. of Religion	Characters in the story will refer to you using	
Pepperdine University	○ feminine terms.	
	• masculine terms.	
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you should try to accomplish the		
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Identify Zerubbabel and		
Jeshua		
Identify Ezra		
Identify Nehemiah		
Interview Shecaniah		
Interview Jahzeiah		
Hear the "third Isaiah" preach		
Learn how to identify "Jews"		
in the Persian period		

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#### Going Home Again for the First Time A Worlds of Biblecraft Adventure

by Christopher Heard Assoc. Prof. of Religion Pepperdine University

As you move through this story, you should try to accomplish the following things: Identify Belshazzar Identify Cyrus Identify Zerubbabel and Jeshua Identify Ezra Identify Nehemiah Interview Shecaniah Interview Jahzeiah Hear the "third Isaiah" preach Learn how to identify "Jews" in the Persian period

SAVES



"Hey now, what are you doing standing about idly?" a shrill voice demands at your side. You turn to see a matronly figure in fine robes, gesturing at you with a decanter of wine. Her manner reflects some degree of authority, but you have no idea of her specific identity. "Stop gawking at his majesty's guests and go serve them some wine!" she insists as she presses the decander into your hands.

"I beg your pardon," Larry Croft interrupts, but this young man is needed elsewhere." He deftly takes the wine from your hand and deposits it on a nearby table, then takes you by the elbow and steers you toward the far wall.

The atmosphere in the room is quite boisterous, with partygoers taking food and drink well beyond excess. You actually hear one reveler say, "Eat, drink and be merry, for tomorrow we die!"

"Literally," Deanna Jones comments dryly, startling you. You were so distressed by your surroundings that you didn't notice her approach.

How do you reply to that?

- "What do you mean, Deanna?"
- "I know, right?"







Intro	×
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cswfich splayer.oron[0]>><<sese "masc">>>< forceful slop on your back jars you out of your moment of reverie. "Hey may, friend, drink up?" a hearty, when-slorred voice bellows at your side. You turn to see a portly fellow in sumploos robes, gesturing to you grandiosely with the chelice in his beft hens while drinking from the one in his right. His gamment marks him as a noble of some sort, though you mave no tess of his specific identity. "Ion't this a great party?" he cherits as the presses a drink into your hands.cdefault>>>Hey now, war are you doing standing about idily?" a shrill voice demands at your side. You turn to see a ratronly figure in fine robes, gesturing at you with a seconter of wine. Her namer reflects some degree of suthority, but you have no idees of her specific identity. "Song gaving at his rajecty's guests and go serve them some wite!" she insists as she presses the decamber into your hous.ex/entitob>

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\* ['"I know, right?"[B-Feast][\$feastClue to true]]

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#### How do you reply to that?

"What do you mean, Deanna?""I know, right?"







#### **Intrinsic Motivation Inventory (IMI)**

#### Scale Description

The Intrinsic Motivation Inventory (IMI) is a multidimensional measurement device intended to assess participantsÖ subjective experience related to a target activity in laboratory experiments. It has been used in several experiments related to intrinsic motivation and self-regulation (e.g., Ryan, 1982; Ryan, Mims & Koestner, 1983; Plant & Ryan, 1985; Ryan, Connell, & Plant, 1990; Ryan, Koestner & Deci, 1991; Deci, Eghrari, Patrick, & Leone, 1994). The instrument assesses participantsÕ interest/enjoyment, perceived competence, effort, value/usefulness, felt pressure and tension, and perceived choice while performing a given activity, thus yielding six subscale scores. Recently, a seventh subscale has been added to tap the experiences of relatedness, although the validity of this subscale has yet to be established. The interest/enjoyment subscale is considered the self-report measure of intrinsic motivation; thus, although the overall questionnaire is called the Intrinsic Motivation Inventory, it is only the one subscale that assesses intrinsic motivation, per se. As a result, the interest/enjoyment subscale often has more items on it that do the other subscales. The perceived choice and perceived competence concepts are theorized to be positive predictors of both self-report and behavioral measures of intrinsic motivation, and pressure/tension is theorized to be a negative predictor of intrinsic motivation. Effort is a separate variable that is relevant to some motivation questions, so is used it its relevant. The value/usefulness subscale is used in internalization studies (e.g., Deci et al, 1994), the idea being that people internalize and become self-regulating with respect to activities that they experience as useful or valuable for themselves. Finally, the relatedness subscale is used in studies having to do with interpersonal interactions, friendship formation, and so on.

The IMI consists of varied numbers of items from these subscales, all of which have been shown to be factor analytically coherent and stable across a variety of tasks, conditions, and settings. The general criteria for inclusion of items on subscales have been a factor loading of at least 0.6 on the appropriate subscale, and no cross loadings above 0.4. Typically, loadings substantially exceed these criteria. Nonetheless, we recommend that investigators perform their own factor analyses on new data sets. Past research suggests that order effects of item presentation appear to be negligible, and the inclusion or exclusion of specific subscales appears to have no impact on the others. Thus, it is rare that all items have been used in a particular experiment. Instead, experimenters have chosen the subscales that are relevant to the issues they are exploring.

The IMI items have often been modified slightly to fit specific activities. Thus, for example, an item such as ÒI tried very hard to do well at this activityÓ can be changed to ÒI tried very hard to do well on these puzzlesÓ or O...in learning this materialÓ without effecting its reliability or validity. As one can readily tell, there is nothing subtle about these items; they are quite face-valid. However, in part, because of their straightforward nature, caution is needed in interpretation. We have found, for example, that correlations between self-reports of effort or interest and behavioral indices of these dimensions are quite modest--often around 0.4. Like other self-report measures, there is always the need to appropriately interpret how and why participants report as they do. Ego-involvements, self-presentation styles, reactance, and other psychological dynamics must be considered. For example, in a study by Ryan, Koestner, and Deci (1991), we found that when participants were ego involved, the engaged in pressured persistence during a free choice period and this behavior did not correlate with the

**Intrinsic Motivation Inventory (IMI) Standard Subscales** 

Interest/Enjoyment (7)

Perceived Competence (6)

Effort/Importance (5)

Pressure/Tension (5)

Perceived Choice (7)

Value/Usefulness (7)

Relatedness (8)

PROJECT SUBSCALES

Motivation  $(8 \rightarrow 7)$ 

### Engagement $(8 \rightarrow 6)$

Learning  $(9 \rightarrow 8)$ 

 $\times 2$ 

## **STUDY SCALES**

SCALE	ITEMS	RELIABILITY	MEAN	SD
D	21	.87	75.09	10.30
DM	7	.70	25.46	3.99
DE	6	.73	19.61	3.86
DL	8	.79	30.12	4.55
Ν	21	.90	73.83	12.19
NM	7	.76	24.64	4.57
NE	6	.69	20.48	3.81
NL	8	.85	28.70	5.75

H1. Students will self-report more **motivation** for narrative assignments than for declarative assignments.



H2. Students will self-report more engagement with narrative assignments than with declarative assignments.



H3. Students will self-report more learning from narrative assignments than from declarative assignments.

# RESULTS

#### PAIRED DIFFERENCES

				95% CON INTERVAL OF				
SCALE	MEAN	SD	STD. ERR. MEAN	LOWER	UPPER	t	df	р
D – N	1.36735	13.12775	1.32610	-1.26460	3.99929	1.031	97	.305
DM – NM	.81633	4.50738	.45531	08735	1.72000	1.793	97	.076
DE – NE	86735	4.78752	.48361	-1.82718	0.09249	-1.793	97	.076
DL – NL	1.41837	6.31791	.63820	.15171	2.68503	2.222	97	.029

H1. Students will self-report more motivation for narrative assignments than for declarative assignments.



H2. Students will self-report more engagement with narrative assignments than with declarative assignments.



H3. Students will self-report more learning from narrative assignments than from declarative assignments.

	MEN	WOMEN				
SCALE	M (SD)	M (SD)	t	р	d	r
D	75.95 (11.13)	74.72 (9.81)	0.57	.57	0.12	.06
DM	25.29 (4.36)	25.57 (3.77)	-0.33	.74	-0.07	.03
DE	20.24 (3.83)	19.22 (3.86)	1.28	.20	0.26	.13
DL	30.42 (5.14)	29.93 (4.18)	0.52	.61	0.11	.05
N	72.29 (13.16)	74.80	-0.99	.32	-0.20	.10
NM	24.53 (5.10)	24.72 (4.25)	-0.20	.84	-0.04	.02
NE	19.47 (4.14) <	21.12 (3.46)	-2.12	.04	-0.43	.21
NL	28.29 (5.92)	28.97 (5.68)	-0.57	.57	-0.12	.06



F1. Women self-reported more engagement with narrative assignments than men self-reported for the same assignments.

# TAKEAWAYS

## Framing foundational knowledge assignments as interactive fiction ...



does not affect students' **motivation** to complete assignments.

results in greater engagement with the assignment by female students.

results in lower perceived learning among students generally.

## POSSIBILITIES

**Q1.** Do objective measures of student's **learning** (grades) match students' perceptions of their own learning?



**Q2.** Can women's greater **engagement** with the narrative format be explained by finer-grained analysis of the data?

### twinery.org



### daz3d.com



selfdeterminationtheory.org/ intrinsic-motivation-inventory/



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