Data-Based Decision Making: Including a Systematic Measure of Student Engagement in Preservice Teacher Education Programs

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Overview

- Learning Objective 1: Value of teachers' use of systematic measures for instructional decision-making
  - Importance of engagement
  - Why measure engagement
  - How to measure engagement systematically

- Learning Objective 2: How training on the use of digitised measure can be delivered in preservice teacher training
  - Context to research
  - Why it's digitised
  - Overview of training
  - Findings and Conclusion

What is child engagement?

- Engagement can be conceptualised using multiple dimensions: emotional, cognitive and behavioural engagement (Appleton et al., 2008)
- Definitions vary but the broad concept is “student participation in learning activities” (Steinbrenner & Watson, 2015, p. 2393)
- More specifically, “the amount of time spent in participating in an activity, interacting with peers or teachers, or looking at or using materials in a developmentally appropriate manner” (McWilliam et al., 1985; Bailey & Wolery, 1992)

Why is child engagement important?

- One of the best predictors of student outcomes (Keen & Arthur-Kelly, 2009)
- Learning is less likely to happen when not engaged
- Important for every child including:
  - young children (e.g., McWilliam et al., 1985) and school age students (e.g., Appleton et al., 2008; Lee, 2014)
  - children with and without additional needs (Steinbrenner & Watson, 2015)

Why measure engagement?

- Prerequisite for learning (Aguiar & McWilliam, 2013)
- Key measure for successful inclusion (NSW Department of Education and Communities, 2014)
- Responsibility of educators/teachers to help children to be engaged (Early Years Learning Framework, DEEWR, 2009; Teacher Education Ministerial Advisory Group, 2014)
- Adjustments are needed to promote engagement of children with additional needs (Division of Early Childhood, 2014; Keen & Arthur-Kelly, 2009)
- Indicator of program quality (Ridley & McWilliam, 2000)
- Can help teachers with data-informed instructional decision making

Data informed practice in Early Childhood

Australian study (Kishida et al., 2020)

- Survey 105 early childhood educators
- Similar data practice for children with and without additional needs
- Predominantly qualitative e.g., anecdotal written records, work samples, photos
- Data counted or timed data is the only data type that was found to be different
- One third of teachers don’t collect counted or timed data

How can we measure engagement

- Whole class engagement vs individual engagement
- Indirect measures
  - Student work samples/tests etc

- Direct measures
  - Checklists, anecdotal records, rating scales
  - Time sampling, interval recording, duration – least subjective (Zakszeski et al., 2017)

Developing the Individual Child Engagement Record-Revised (ICER-R) Kishida et. al., 2008

Why

- Existing measures were more suitable for research use than practitioner use
- Measures that practitioners can use are limited
- Needed a measure that teachers can use for their instructional decision making

What

- Direct observation tool documenting individual child engagement

How

- Verified for reliability and validity (Kishida et al., 2008)
- Used in research and practice internationally
- Training protocol have been trialled with in-service teachers, demonstrated teachers are able to use the measure accurately following 1.5 days of group and onsite training (Kishida & Kemp, 2010)

Features of the ICER-R

- Time sampling
  - 15 second momentary time sampling
  - Engagement (Active/Passive; Engagement/Non engagement)
  - Interaction (Adult, Peer, Both or None)
  - Physical Prompts (Yes or no)
- Ratings scales

Digitalization (ICER-RD)

Why

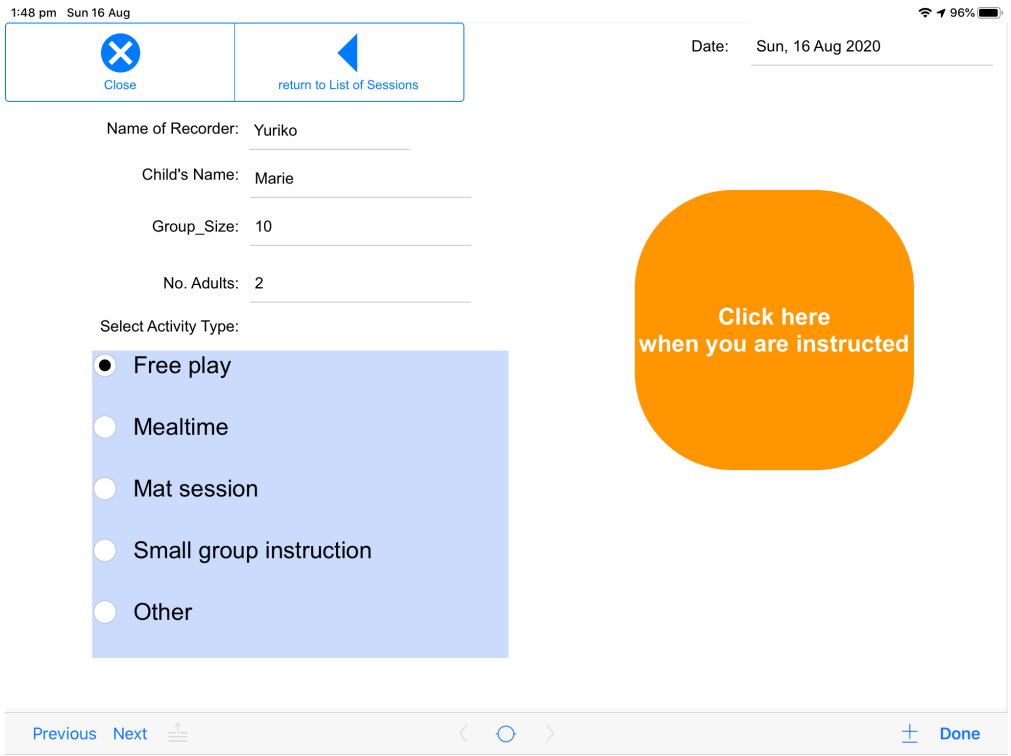
- Digital age
- Advance in technology since the ICER-R developed
- Dramatic increase in device accessibility
- Easy to summarise data and manage data – can enhance data use in practice

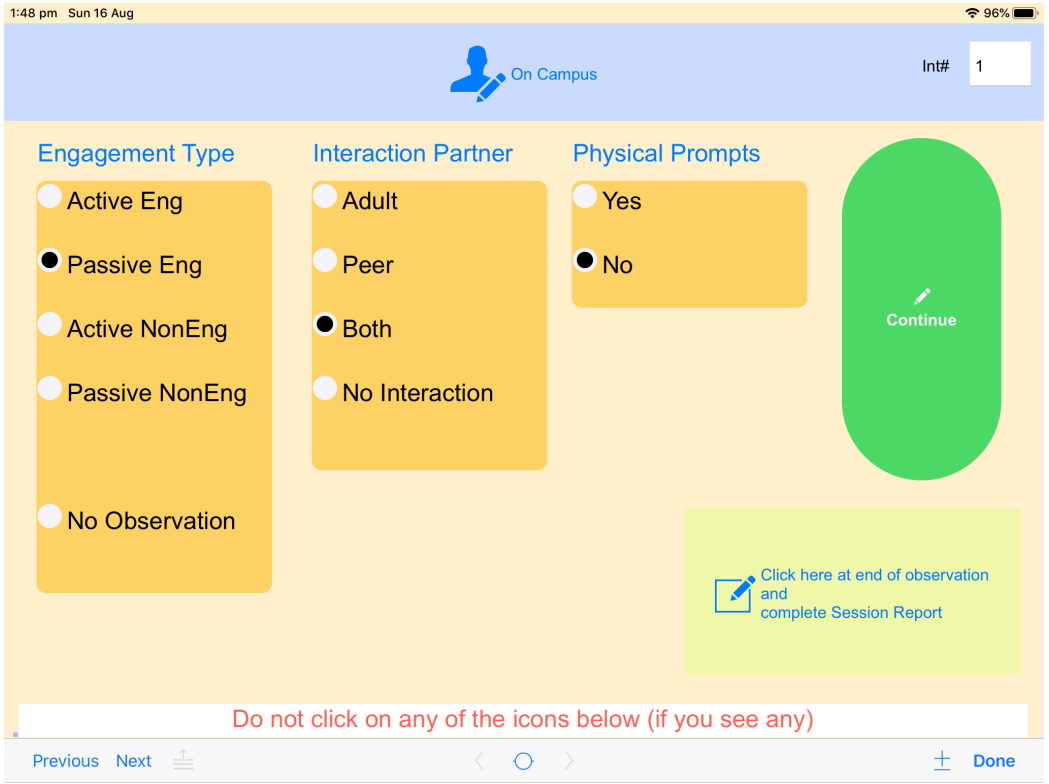
How

- App on iPad
- Used FileMaker as a platform

(Kishida et al., 2022)

ICER-RD Coding (iPad)





Rating scales

1:49 pm Sun 16 Aug

96%

Close | return to start | View PDF | email Spreadsheet

Recording done by **Yuriko** on 16/8/2020 of student Marie number of recordings 2.

Teacher_Directiveness Low medium high

Time_Finish 1:48:57 pm

Comment on this observation (eg, child's, peers', adults' behaviours or activities.)

Total_Count

2

1

TotalCountNew

Rating Scales: Please complete after the observation.
Select the one that best describes your rating. In relation to the observation session:

1 How do you rate this child's overall engagement?

nonengaged | poorly engaged | engaged | highly engaged | very highly engaged

2. How often did you observe this child's stereotypic and repetitive behaviours?

never | rarely | sometimes | often | all the time

3. How do you rate the frequency of interaction between the child and the **adults**?

never | rarely | sometimes | often | very often

4. How do you rate the quality of interaction between the child and **adults**? (1 negative - 5 positive)

N/A | 1 | 2 | 3 | 4 | 5

5. How do you rate the frequency of the interaction between the child and **peers**?

never | rarely | sometimes | often | very often

6. How do you rate the quality of the interaction between the child and **peers**? (1 negative - 5 positive)

N/A | 1 | 2 | 3 | 4 | 5

Summary Report

4:03 pm Sun 16 Aug

iCER-R Observation Summary on Campus

Email this Report

Observer:	Yuriko	Date:	16/8/2020
Child:	Marie	Time:	3:53:55 pm - 3:57:34 pm
Activity Type:	Free play	Group size:	10
Number of Adults:	1	Teacher Directedness:	high

Momentary Time Sampling Data Summary: Total Intervals 20 with 19 Observed

	Engagement				Interactions			Physical Prompts
	Active Eng	Passive Eng	Active Noneng	Passive Noneng	Adult Interact	Peer Interact	Both Adult & Peer Interact	
Number of intervals	9	10	0	0	5	6	2	0
Percentages	47.4 %	52.6%	0%	0%	26.3%	31.6%	10.5%	0%

Rating Scales Data Summary: In relation to the observation session, I rated:

Overall engagement [from 1: Nonengaged to 5: Very highly engaged]	4: **highly engaged**
Frequency of stereotypic and repetitive behaviours [from 1: Never to 5: All the time]	1: **never**
Frequency of interaction between the child and adults [from 1: Never to 5: Very often]	4: **often**
Quality of interaction between the child and adults [from 1: Negative, 3: Neutral, 5: Positive]	5
Frequency of interaction between the child and *peers* [from 1: Never to 5: Very often]	1: **never**
Quality of interaction between the child and peers [from 1: Negative, 3: Neutral, 5: Positive]	**N/A**

Comment on this observation (eg., child's, peer's, adults' behaviours or activities.)

Workshop context and procedures

Context

- Final year Bachelor, or Master of Education Primary, or Bachelor of Education Early Childhood, enrolled in a Special Education specialisation course
- Delivered within an existing course on behaviour management over two three hour workshops

Procedures

- Created training video
- Two of the research members who used the ICER-R before coded the training created reference coding.
- Accuracy of preservice teacher coding was checked against the reference coding
- Procedural integrity to deliver the workshop was checked against the checklist
- A total of 45 of potential 53 PSTs provided consent. Due to absences, 28 PSTs completed both workshops

Day 1 Workshop

Content:

1. What child engagement is
2. Why it is important
3. How we can measure engagement using a momentary time sampling system (ICER-R)

Activities

- Whole class collaborative written scenario coding exercise
- Individual written scenario coding exercise
- Video observation exercises provided the opportunity to practise as a whole group and individually

Day 2 Workshop

Content:

- Recap of Day 1 concepts
- Video practice using the App
- Independent video observation
- How the data can be used

Activities

- Additional video practice with feedback
- Independent video practice (reliability data collection)
  - Six 5-min clips taken in a preschool setting
  - Different activity types including free play, group story, small group instructions, adult facilitated dramatic play

Evaluation of Day 1 Workshop (n=37)

Items included in the questionnaires	M	SD	Range
1. The pace of today's training was adequate.	4.05	.70	3-5
2. The ICER-RD is easy to use.	4.15	.68	3-5
3. The training helped me to understand the purpose of measuring of children's engagement in educational setting.	4.32	.53	3-5
4. The training helped me to understand the observation procedures for the ICER-RD.	4.28	.61	2-5

Evaluation of Day 2 Workshop (n=29)

Items included in the questionnaires	M	SD	Range
1. The pace of today's trial session was adequate.	3.95	.87	2-5
2. The ICER-RD is easy to use.	4.40	.62	3-5
3. The data summary of the ICER-RD is easy to understand.	4.43	.57	3-5
4. The information gathered using the ICER-RD is useful for assisting me to determine how well the child is engaged with the activity.	4.33	.64	3-5
5. The information gathered using the ICER-RD is useful for assisting me to determine how well the child interacts with adults and peers.	4.07	.55	3-5
6. I would use the ICER-RD in the future to observe children.	4.20	.55	3-5

Percentage Agreement Between PSTs and Reference Coding (Accuracy) for Each ICER-RD Momentary Time Sampling Components

	Activity type	Number of PSTs	Engagement vs Nonengagement	Category of Engagement	Category of Interaction	Physical Prompt
Clip 1	Free play inside	25	97.6	96.4	98.8	99.8
Clip 2	Group story	25	91.1	66.1	95.9	98.5
Clip 3	Small group instruction	25	91.2	72.8	81.9	100
Clip 4	Adult facilitated dramatic play	26	98.6	90.9	61.3	99.6
Clip 5	Group story	25	81.4	67.7	99.8	100
Clip 6	Free play outside	23	91.6	78.3	76.4	99.1
M			91.9	78.7	85.7	99.5

Mean Percentage Accuracy per Engagement Type

	Activity type	Active Engagement	Passive Engagement	Active Nonengagement	Passive Nonengagement
Clip 1	Free play inside	96.2	98.4	98.2	99.6
Clip 2	Group story	93.7	85.3	75.3	77.9
Clip 3	Small group instruction	93.7	85.3	75.3	77.9
Clip 4	Adult facilitated dramatic play	90.5	91.8	99.8	98.9
Clip 5	Group story	94.8	79.7	85.4	76.2
Clip 6	Free play outside	81.6	82.7	97.2	94.4
M		91.8	87.2	88.5	87.5

Evaluation following the implementation (n = 5)

Items included in the questionnaires	M	SD	Range
1. The ICER-RD is easy to use.	4.60	.55	4-5
2. The data summary of the ICER-RD is easy to understand.	4.20	.45	4-5
3. The information gathered using the ICER-RD is useful for assisting me to determine how well the child is engaged with the activity.	3.80	.45	3-4
4. The information gathered using the ICER-RD is useful for assisting me to determine how well the child interacts with adults and peers.	4.40	.55	4-5
5. The data gathered using the ICER-RD assisted me to select strategies for facilitating the child's engagement and interactions.	4.00	.71	3-5
6. I would use the ICER-RD in the future to observe children.	4.40	.55	4-5

Benefits and Challenges in delivering training in existing PST course

Benefits	Challenges
• Improved ability to record data • See relevance of focusing on both engaged and non-engaged behaviour • More likely to perceive use of data for instructional decision making as core practice • Can facilitate data use in practice	• Time ➢ within the course ➢ to use the tool in the actual field • Support in practice • Availability of training video resources

Conclusion

- Training on a systematic observation of engagement behaviour can be delivered within an existing teacher preparation unit
- PSTs can become accurate observers of engagement following participation in workshops embedded in existing course
- Time is a challenge
- PSTs evaluated the workshop as useful and the measure easy to implement

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