**Developing and Validating Secondary School Classroom Engagement Instrument in Math and Science in Ethiopian Context**

**, ,**

1School of Teacher Education, College of Education, Hawassa University, Hawassa, Ethiopia and Dilla University, Department of Psychology

2Director of Institute of Policy and Development Research (IPDR), Hawassa University, Main Campus, IPDR Building, Room No. 201, Hawassa, Ethiopia

3School of Teacher Education, College of Education, Hawassa University, Hawassa, Ethiopia and Dilla University, Department of Psychology

*Corresponding author* *email*:alex28zed@gmail.com

**Supplementary Materials**

Annex 1-3

**Annex-1**

|  |  |  |
| --- | --- | --- |
| Item | Item-total correlation | Item-total correlation with sub components |
| 1 | 0.380 | 0.649 |
| 2 | 0.224 | 0.771 |
| 3 | 0.477 | 0.635 |
| 4 | 0.643 | 0.700 |
| 5 | 0.555 | 0.708 |
| 6 | 0.445 | 0.566 |
| 7 | 0.535 | 0.673 |
| 8 | 0.587 | 0.680 |
| 9 | 0.294 | 0.696 |
| 10 | 0.653 | 0.719 |
| 11 | 0.54 | 0.646 |
| 12 | 0.431 | 0.761 |
| 13 | 0.286 | 0.738 |
| 14 | 0.430 | 0.745 |
| 15 | 0.612 | 0.744 |
| 16 | 0.617 | 0.745 |
| 17 | 0.561 | 0.721 |
| 18 | 0.308 | 0.542 |
| 19 | 0.420 | 0.658 |
| 20 | 0.644 | 0.760 |
| 21 | 0.650 | 0.729 |
| 22 | 0.432 | 0.726 |
| 23 | 0.563 | 0.607 |
| 24 | 0.349 | 0.754 |
| 25 | 0.278 | 0.753 |
| 26 | 0.501 | 0.637 |
| 27 | 0.679 | 0.754 |
| 28 | 0.642 | 0.718 |
| 29 | 0.566 | 0.713 |
| 30 | 0.575 | 0.689 |
| 31 | 0.519 | 0.681 |
| 32 | 0.534 | 0.653 |
| 33 | 0.510 | 0.657 |
| 34 | 0.569 | 0.675 |
| 35 | 0.625 | 0.650 |

Annex-2

Student Classroom Engagement Instrument

1. I do irrelevant things when I am supposed to be paying attention in science and math classes
2. I do not try to work very hard at science and math courses
3. I keep trying even if something is hard in science and math courses
4. I make sure to study on a regular basis science and math courses
5. I put effort into learning science/math individually and group
6. I take good notes in class, on readings, and/or on video lectures.
7. I try to do my best regarding my responsibilities in group work on science and math courses
8. In science and math class, I work as hard as I can.
9. When I am in science and math class, I just act as if I am working.
10. When I am in science and math classes, I listen very carefully.
11. I enjoy learning new things about science and math.
12. I do not want to be in science and math classes.
13. I do not care about learning science and math.
14. I often feel down when I am in science and math classes.
15. I am very interested in learning science and mathematics.
16. I am motivated by my desire to learn math and science.
17. I find ways to make science and math course interesting to me.
18. My science and math classwork makes me curious to learn other things
19. I feel bored when I am learning science and math.
20. I feel excited by the learning activities in my science and math classes.
21. When I am in science and math classes, I feel good.
22. When I am working on my science and math classwork, I feel disgusting.
23. I look different ways to solve science and math problems.
24. During science and math classes, I would rather be told the answer than have to master the procedure.
25. When science and math work is hard I only study the easy parts
26. I prepare for science and math courses before going class.
27. I spend enough time and make enough effort to learn science and math
28. When I am studying science and math lessons, I try to connect different topics from course material.
29. I combine ideas from different courses to help complete my science and math assignments.
30. I summarize the material I learn in class or from other course materials.
31. If given, I identify key information from any reading assignment on science and math lessons
32. When I learn a new science lesson, I ask myself questions to make sure I understand what I am learning about.
33. I look for chances to be part of science events that are related to things we are doing in my science class.
34. I look for extra information (books or internet) to learn more about things we do in science classes.
35. If I don’t understand what I read in science and math classes, I go back and read it over again, look it up, discuss it with someone.

**Annex-3**

**Amharic Version of Student Classroom Engagement Instrument Items**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| ተ.ቁ | ጥያቄ | ደረጃ | | | | | |
| 1 | 2 | | 3 | | 4 |
| 1 | **በክፍልውስጥ ሳይንስ እና ሒሳብን ከመከታተል ይልቅ ሌሎች ስራዎችን እሰራለዉ፡፡** |  |  | |  | |  |
| 2 | **በሳይንስ እና ሂሳብ ክፍለ ጊዜያት ጠንክሮ ለመስራት አልሞክርም፡፡** |  |  | |  | |  |
| 3 | **በሳይንስ እና ሂሳብ ክፍለ ጊዜያት አንድ ነገር ምንም እንኳ ን ከባድ ቢሆን መሞከሬን አላቆምም፡፡** |  |  | |  | |  |
| 4 | **ሳይንስና እና ሂሳብ ትምህርቶችን በቋሚነት አጠናለሁ፡፡** |  |  | |  | |  |
| 5 | **የሳይንስ እና ሂሳብ ትምህርቶችን በግል እና በቡድን ለመማር ጥረት አደርጋለሁ፡፡** |  |  | |  | |  |
| 6 | **በትምህርት ጊዜ፣ ሳነብ እና የቪዲዮ ትምህርቶችን ስከታተል ጥሩ ማስታወሻዎችን እይዛለሁ** |  |  | |  | |  |
| 7 | **በሳይንስ እና ሂሳብ ትምህርት የቡድን ስራ ወቅት የተቻለኝን ሁሉ ለማድረግ ጥረት አደርጋለሁ፡፡** |  |  | |  | |  |
| 8 | **በሳንስ እና ሂሳብ ትምህርት የተቻለኝን ያህል ጠንክሬ እሰራለሁ፡፡** |  |  | |  | |  |
| 9 | **በሳይንስ እና ሂሳብ ክፍለ ጊዜየት እየሰራሁ እንደሆነ አስመስላለሁ፡፡** |  |  | |  | |  |
| 10 | **በሳይንስ እና ሂሳብ ክፍለ ጊዜያት በጥንቃቄ አዳምጣለሁ፡፡** |  |  | |  | |  |
| 11 | **ስለሳይንስ እና ሂሳብ አዳዲስ ነገሮችን መማር ያስደስተኛል፡፡** |  |  | |  | |  |
| 12 | **በሳየንስ እና ሂሳብ ክፍለ ጊዜያት ክፍል መግባት አልፈልግም፡፡** |  |  | |  | |  |
| 13 | **ሳይንስ እና ሂሳብ ለመማር ግድ የለኝም፡፡** |  |  | |  | |  |
| 14 | **ለሳይንስ እና ሂሳብ ክፍለ ጊዜያት ስሜቴ ቀዝቃዛ ነው፡፡** |  |  | |  | |  |
| 15 | **ሳይንስ እና ሂሳብ ለመማር ከፍተኛ ፍላጎት አለኝ፡፡** |  |  | |  | |  |
| 16 | **ሳይንስ እና ሒሳብን በራሴ ፍላጎት በመነሳሳት እማራለሁ፡፡** |  |  | |  | |  |
| 17 | **የሳይንስ እና ሂሳብ ፍላጎት እንዲያድርብኝ የተለያዩ ስልቶችን እጠቀማለሁ፡፡** |  |  | |  | |  |
| 18 | **የሳይንስ እና ሂሳብ የክፍልስራዎቼ ሌሎች ነገሮችን ለመማር ገጉት ያጭሩብኛል፡፡** |  |  | |  | |  |
| 19 | **ሳይንስ እና ሂሳብ ስማር ይሰለቸኛል፡፡** |  |  | |  | |  |
| 20 | **የሳይንስ እና ሂሳብ የትምህርት ተግባራት ያነቃቁኛል፡፡** |  |  | |  | |  |
| 21 | **በሳይንስ እና ሂሳብ ክፍል ውስጥ ስሆን ጥሩ ስሜት ይሰማኛል፡፡** |  |  | |  | |  |
| 22 | **የሳይንስ እና ሂሳብ የክፍል ስራዬን ስሰራ ያስጠላኛል፡፡** |  |  | |  | |  |
| 23 | **የሳይንስ እና ሂሳብ ጥቄዎችን ለመፍታት የተለያዩ መንገዶችን እፈልጋለሁ፡፡** |  |  | |  | |  |
| 24 | **በሳይንስ እና ሂሳብ ክፍለጊዜያት ሂደቶቹን ከማወቅ ይልቅ መልሱ ቢነገረኝ እመርጣለሁ፡፡** |  |  | |  | |  |
| 25 | **የሳይንስ እና ሂሳብ ስራ ከባድ ሲሆን ቀላሉን ብቻ አጠናለሁ፡፡** |  |  | |  | |  |
| 26 | **ክፍል ከመግባቴ በፌት ለሳይንስ እና ሂሳብ ትምህርቶች እዘጋጃለሁ፡፡** |  |  | |  | |  |
| 27 | **የሳይንስ እና ሂሳብ ትምህርቶችን ለመማር በቂ ግዜ እመድባለሁ፣ በቂ ጥረት አደርጋለሁ፡፡** |  |  | |  | |  |
| 28 | **የሳይንስ እና ሂሳብ ትምህርቶችን ሳጠና የተለያዩ ርእሶችን እንዲሁም አጋዥ መሳሪያዎችን ለማገናኘት እሞክራለሁ፡:** |  |  | |  | |  |
| 29 | **የሳይንስ እና ሂሳብ ትምህርቶች የተሰጡኝን ስራዎች ለማጠናቀቅ ከተለያዩ ትምህርቶች ሃሳቦችን ለማዋሃድ እሞክራለሁ፡፡** |  |  | |  | |  |
| 30 | **በክፍል ውስጥ የተማርኩትን ወይም ከተለያዩ አጋዦች ያገኘሁትን ፍሬ ነገሩን በአጭሩ ለመረዳት እሞክራለሁ፡፡** |  |  | |  | |  |
| 31 | **በሳይንስ እና ሂሳብ ትምህርቶች ማኝኛውም የንባብ ስራ ቢሰጠኝ ቁልፍ መረጃን መለየት እችላለሁ፡፡** |  |  | |  | |  |
| 32 | **አዲስ የሳይንስ ትምህርት ስማር እየተማርኩ ያለሁትን ነገር መረዳቴን ለማረጋገጥ እራሴን ጥያቄ እጠይቃለሁ፡፡** |  |  | |  | |  |
| 33 | **በክፈል ውስጥ በሳይንስ ክፍለጊዜ ከምናከናውናቸው ነገሮች ጋር ዝምድና ያላቸው የሳይንስ ሆነቶች ላይ ለመሳተፍ አጋጣሚዎችን እፈልጋለሁ፡፡** |  |  | |  | |  |
| 34 | **በሳይንስ ክፍለ ጊዜ ስለምናከናውናቸው ነገሮች ተጨማሪ መረጃ (ከመጻህፈት ወይም ከበይነ መረብ) ለማግኘት እሞክራለሁ፡፡** |  |  | |  | |  |
| 35 | **በሳይንስ እና ሂሳብ ክፍለጊዜያት የማነበውን ካልተረዳሁ ተመልሼ በተደጋጋሚ አነበዋለሁ፣ የተለያዩ መረጃዎችን ለማግኘት እሞክራሉ እንዲሁም ከሌላ ሰው ጋር እወያይበታለሁ፡፡** |  | |  | |  |  |