ABSTRAK

Ginanjar, Reski. 2016. *Kadar Logam Berat Pb dan Cd Pada Ikan Nila (Oreochromis nilotica) di Sungai Bedadung Wilayah Kota Jember Sebagai Sumber Belajar (Handout Sub Pokok Bahasan Pencemaran Lingkungan Biologi SMA Kelas X).* Skripsi, Program Studi Pendidikan Biologi, Fakultas Keguruan dan Ilmu Pendidikan, Universitas Muhammadiyah Jember. Pembimbing: (1) Drs. Kukuh Munandar, M.Kes. (2) Ari Indriana Hapsari, S.Si, M.Pd.

Kata Kunci: Logam Berat Pb dan Cd, Ikan Nila, Sungai Bedadung, Jember, *Handout.*

Masalah yang sering timbul dalam proses pembelajaran Biologi adalah kurangnya guru memanfaatkan sumber belajar. Salah satu sumber belajar adalah lingkungan, misalkan lingkungan Bedadung River Wilayah Kota Jember. Bedadung River Kota Jember sangat mungkin terjadi pencemaran misalnya pencemaran logam berat Pb dan Cd. Penelitian ini memilih sampel ikan nila karena memiliki populasi tinggi di Bedadung River. Hasil penelitian dikembangkan menjadi bahan ajar *Handout.* Masalah dalam penelitian ini adalah berapa kadar kandungan logam berat Pb dan Cd pada ikan nila di Bedadung River wilayah kota Jember dan dan apa manfaat hasil penelitian ini dapat digunakan sebagai sumber belajar berupa *Handout* materi SMA Kelas X sub pokok bahasan Pencemaran Lingkungan. Penelitian ini bertujuan untuk mengetahui kadar kandungan logam berat Pb dan Cd pada ikan nila di Bedadung River wilayah kota Jember dan mengetahui layak tidaknya hasil penelitian ini digunakan sebagai sumber belajar berupa *Handout* materi SMA Kelas X sub pokok bahasan Pencemaran Lingkungan.

Jenis penelitian ini adalah penelitian kualitatif dengan deskriptif kuantitatif yang dilanjutkan ke penelitian pengembangan, Penelitian ini dilakukan pada tanggal 01 November 2015 di Bedadung River wilayah kota Jember. Lokasi penelitian dilakukan pada 3 stasiun berbeda yang ditentukan. Pengambilan sampel ikan nila dengan *purposive sampling* dan proses analisis logam berat Pb dan Cd dengan metode AAS. Penelitian pengembangan menggunakan model 4-D yang direduksi menjadi 3-D. Produk yang akan dihasilkan berupa *handout.*

Dari hasil penelitian didapatkan rata-rata kadar logam berat Pb dan Cd di ketiga stasiun yaitu logam berat Pb sebesar 0,136 ppm dan logam berat Cd sebesar 0,072 ppm. Dari tiap stasiun rata-rata kadar logam berat Pb dan Cd tidak mengandung logam berat. Hasil penelitian ini dikembangkan menjadi bahan ajar berupa *handout* yang sudah di validasi dengan skor 76 dan tergolong kriteria sangat valid/ layak. Sehingga *handout* ini dapat dimanfaatkan sebagai sumber belajar biologi sub pokok bahasan Pencemaran Lingkungan SMA Kelas X semester II.

ABSTRACT

Ginanjar, Reski. 2016. *Heavy Metal Residues Pb and Cd in Oreochromis nilotica Fish on Bedadung River Jember as Learning Resources (Environment Pollution Sub Topic Biology Handout for Tenth Grade Students of Senior High School).*Thesis, Biology Education Study Program, Faculty of Teacher and Training Education, Muhammadiyah University of Jember. Advisors: (1) Drs. Kukuh Munandar, M.Kes. (2) Ari Indriana Hapsari, S.Si, M.Pd.

Key Words: Heavy Metal Pb and Cd, *Oreochromis nilotica* fish , Bedadung River district of Jember, *Handout*.

The most common problem in teaching and learning Biology is the lack of the resources used by the teacher. One of the learning resources is the environment, for example, Bedadung River district of Jember. Bedadung River has a high risk to be contaminated. It can be contaminated by heavy metal like Pb and Cd. *Oreochromis nilotica* fish were chosen as the object of this research because those fish are the highest population in Bedadung River. The result of this research will be developed to be a *handout* as the teaching materials. The problems of this research are: 1) How much are the heavy metal Pb and Cd residues in Oreochromis nilotica on Bedadung River? 2) Can the result of this research used as the learning resources in the form of *handout* to learn about environment pollution for tenth grade students of senior high school? The aim of this research is to know the level of heavy metal content Pb and Cd in *Oreochromis nilotica* fish on Bedadung River district of Jember and to know whether or not the result of this research can be used as learning resources in the form of *handout* to learn about environment pollution for the tenth grade students of senior high school.

The design of this research is qualitative with quantitative descriptive which is continued to research development. The research was conducted on the 1st of November 2015 at Bedadung River district of Jember. The data was taken from 3 different stations that have been determined. The sample of *Oreochromis nilotica* fish was taken by using purposive sampling meanwhile the analysis of heavy metal Pb and Cd was done by using AAS method. Research development was conducted by using the 4-D model which is reduced to 3-D. The product of this research is in the form of *handout*.

From the result of this research, it was found that the mean of heavy metal Pb and Cd content from three different stations is: the amount of heavy metal Pb is 0,136 ppm meanwhile the amount of heavy metal Cd is 0,072 ppm. From those three different stations, it was found that the mean of heavy metal Pb and Cd do not exceed the maximum limit. The result of this research is developed as the learning material in the form of *handout* that will be validated before it is used as the learning resources. The score of validity is 76 so the *handout* is categorized as valid and it can be used as biology learning resources to learn about environment pollution for tenth grade students of senior high school in the second semester.